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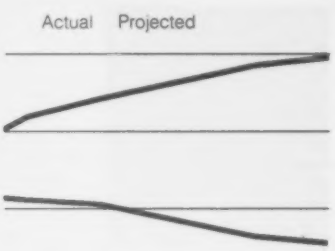

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FINANCIAL REVIEW

NON-RECURRING ITEMS PUSH SECOND QUARTER EARNINGS DOWN 22.9 PERCENT

Even though the industry experienced a quarterly sales increase of 2.8 percent, investor-owned electric utility earnings per share before extraordinary items decreased 22.9 percent in the second quarter of 1990 compared to the second quarter of 1989, dropping from $0.48 to $0.37. The decline was due to several one-time downward adjustments to earnings, an increase in operating expenses, and a decrease in earnings accurals.

Income Statement

Second quarter 1990 electric operating revenue increased a modest 2.0 percent over the second quarter of 1989, to $34.5 billion from $33.8 billion. Behind the modest increase was an adverse rate decision affecting one company that resulted in refunds reducing revenue by $461 million. Had it not been for these one-time refunds, total electric operating revenue would have increased by 3.4 percent over the second quarter of 1989.

The industry's operating ratio increased from 80.1 percent in the second quarter of 89 to 81.6 percent in the second quarter of 90. Without the one-time refunds, the operating ratio would have increased to only 80.5 percent.

Electric operating expenses increased 3.9 percent from $27.1 billion in second quarter 1989 to $28.2 billion in second quarter 1990. The 3.9 percent increase in expenses combined with the 2.0 percent increase in revenues to reduce electric operating income by 5.5 percent on a quarter-to-quarter basis.

Fuel expense increased 3.6 percent over the second quarter of 1989. The increase is partially attributable to refueling at five nuclear plants.

Other operation and maintenance expense was up 5.7 percent quarter to quarter. This increase, from $11.7 billion to $12.3 billion, was also related in part to refueling and preventive maintenance outages at the five nuclear plants. The outages increased labor and material expenses and resulted in increased replacement power costs. In addition, the start-up of fossil fuel plants pushed up other operation and maintenance costs incurred by two companies.

Largely due to the writeoff of a cancelled plant in the second quarter, depreciation decreased 1.2 percent from second quarter 89. The writeoff of the plant through the depreciation account, however, was offset by deferred taxes and tax credits taken into income.

Other income and deductions decreased from $232 million in the second quarter of 1989 to $168 million in the second quarter of 1990. Plant writeoffs resulting from disallowances and settlements resulted in the decrease. The writeoffs totaled $460 million.

Allowance for Funds Used During Construction dropped from $570 million to $493 million on a quarter-to-quarter basis. The 13.5 percent decline would have been greater if it were not for one company that resumed booking AFUDC during the third quarter of 1989. The ratio of AFUDC as a percentage of net income available for common increased from 17.7 percent in the second quarter of 89 to 19.5 percent in the second quarter of 90 because of the decline in second quarter 1990 income.

Total phase-in accruals decreased from $444 million in the second quarter of last year to $289 million in the second quarter of this year, a decline of 34.9 percent and a sign that phase-in plans are phasing out.

Other interest expense and charges increased by 16.9 percent from $318 million in the second quarter of 1989 to $372 million in the second quarter of 1990. The increase was due to one company's one-time $129 million recognition of the probable payment of unpaid interest that the company had not previously booked.

The pre-tax interest coverage ratio with AFUDC decreased by 9.9 percent second quarter to second quarter. The coverage ratio was 2.10 times for second quarter 1990 versus 2.33 times for second quarter 1989. On an annual basis, the ratio declined 2.0 percent.

The return on average common equity before extraordinary items was 9.6 percent for the twelve months ending June 30, 1990, down from the 9.9 percent for the previous twelve months. The lower return reflects lower earnings due to writeoffs, lower accruals, and other items already discussed. Excluding the one-time adjustments made during the second quarter of each year, the average return on common equity would have been 10.3 percent for the twelve months ending June 30, 1990, compared to 10.0 percent for the twelve months ending June 30, 1989.

Table 1
Investor-Owned Electric Utility Industry Statement of Income
(Millions of Dollars)

	Three Months Ending June 30,			Twelve Months Ending June 30,		
	1990	1989r	% Change[3]	1990	1989r	% Change[3]
Total Electric Operating Revenue[1]	$34,527	$33,836	2.0	$142,881	$138,721	3.0
Electric Operating Expenses						
Fuel	$7,621	$7,353	3.6	$32,418	$31,670	2.4
Other Operation & Maintenance	12,337	11,672	5.7	46,738	44,760	4.4
Depreciation & Amortization	3,821	3,868	(1.2)	15,198	14,687	3.5
Costs Deferred Under Rate Phase-In Plans	(131)	(204)	(36.0)	(585)	(836)	(30.0)
Taxes Other Than Income Taxes	2,806	2,670	5.1	11,171	10,748	3.9
Income Taxes: Federal & Other	1,276	1,280	(0.4)	7,133	6,641	7.4
Deferred Income Taxes	459	536	(14.4)	1,876	2,259	(17.0)
Investment Tax Credits, Net	(30)	(75)	N.M.	(147)	(345)	N.M.
Total Electric Operating Expenses	$28,158	$27,100	3.9	$113,803	$109,585	3.8
Electric Operating Income	$6,369	$6,736	(5.5)	$29,078	$29,135	(0.2)
Other Utility Operating Income	186	199	(6.5)	1,147	1,259	(8.9)
Total Utility Operating Income	$6,555	$6,935	(5.5)	$30,224	$30,395	(0.6)
Other Income & Deductions, Net	168	232	(27.7)	(583)	(1,274)	(54.3)
Phase-in Deferrals	158	240	(34.3)	838	1,017	(17.6)
Allowance for Other Funds Used During Construction	282	277	1.8	1,165	1,310	(11.0)
Total Income Before Interest Charges	$7,162	$7,684	(6.8)	$31,645	$31,447	0.6
Interest Charges						
Interest on Long-Term Debt	$3,955	$3,847	2.8	$15,373	$15,047	2.2
Other Interest Expenses & Charges	372	318	16.9	1,314	1,207	8.9
Allowance for Borrowed Funds Used During Construction	(211)	(293)	(28.0)	(1,076)	(1,289)	(16.5)
Net Interest Expenses & Charges	$4,116	$3,872	6.3	$15,610	$14,964	4.3
Net Income Before Extraordinary Items	$3,046	$3,813	(20.1)	$16,035	$16,483	(2.7)
Extraordinary Items	0	(33)	N.M.	(110)	(110)	0.5
Cumulative Effect of a Change in Accounting Principle	0	(17)	N.M.	(109)	(36)	200.0
Net Income	$3,046	$3,763	(19.0)	$15,816	$16,337	(3.2)
Preferred Dividends Declared	518	536	(3.4)	2,070	2,139	(3.3)
Net Income Available for Common	$2,528	$3,226	(21.6)	$13,746	$14,197	(3.2)
Common Dividends Declared	3,027	3,017	0.4	12,753	12,473	2.2
Additions to Retained Earnings	($500)	$210	(338.1)	$993	$1,724	(42.4)
Average Shares Outstanding (Millions)	6,900	6,860	0.6	6,953	6,837	1.7
Earnings Per Share Before Extraordinary Items and Cumulative Effect of a Change in Accounting Principle[2]	$0.37	$0.48	(22.9)	$2.01	$2.10	(4.3)
Earnings Per Share After Extraordinary Items and Cumulative Effect of a Change in Accounting Principle[2]	$0.37	$0.47	(21.3)	$1.98	$2.08	(4.8)
Common Dividends Per Share[2]	$0.44	$0.44	0.0	$1.83	$1.82	0.5

Source: EEI Survey Data and Standard & Poor"s Compustat II Database Service.
[1]Revenues are adjusted for intra-industry electricity sales for resale.
[2]Based on average shares outstanding as reported to EEI by survey respondents and adjusted for stock splits.
[3]Percent changes may reflect independent roundings.
r—Revised to reflect company restatements.
N.M.—Not meaningful.

Table 2
Investor-Owned Electric Utility Industry Balance Sheet
(Millions of Dollars)

Assets	June 30, 1990	June 30, 1989r	% Change[2]
Utility Plant [1]			
Utility Plant (Including Nuclear Fuel)	$496,303	$470,307	5.5
Less Accumulated Depreciation	150,451	137,326	9.6
Total	$345,853	$332,981	3.9
Construction Work in Progress	32,444	39,819	(18.5)
Net Utility Plant	$378,297	$372,800	1.5
Investments	26,817	24,649	8.8
Current Assets	41,523	38,667	7.4
Deferred Debits	32,790	33,425	(1.9)
Total Assets	$479,427	$469,540	2.1
Capitalization & Liabilities			
Capitalization			
Common Stock	$93,649	$93,525	0.1
Retained Earnings	52,179	51,837	0.7
Preferred Stock	25,534	26,713	(4.4)
Long-Term Debt	172,123	168,415	2.2
Total Capitalization	$343,485	$340,490	0.9
Current Liabilities			
Short-Term Debt	$11,162	$9,799	13.9
Long-Term Debt Due Currently	5,580	5,431	2.7
Other Current Liabilities	31,424	28,753	9.3
Total Current Liabilities	$48,167	$43,983	9.5
Deferred Credits			
Capital Lease Obligations, Non-Current Portion	$4,968	$5,539	(10.3)
Accumulated Deferred Income Taxes	50,849	47,987	6.0
Accumulated Deferred Investment Tax Credits	15,743	16,346	(3.7)
Other Deferred Credits	16,216	15,195	6.7
Total Deferred Credits	$87,775	$85,067	3.2
Total Capitalization & Liabilities	$479,427	$469,540	2.1

Source: EEI Survey Data and Standard & Poor's Compustat Database Service.

[1] Includes non-electric utility plant.
[2] Percent changes may reflect independent roundings.
r –Revised to reflect company restatements.

Balance Sheet

Utility plant increased by 5.5 percent on a quarter-to-quarter basis. A 9.6 percent increase in accumulated depreciation was associated with the increase.

Construction Work In Progress decreased from $39.8 billion as of June 30, 1989, to $32.4 billion as of a year later. CWIP as a percentage of total utility plant in service dropped from 12.0 percent to 9.4 percent over the same period.

Investments for the industry as of June 30, 1990, showed an increase of 8.8 percent to $26.8 billion, up from $24.6 billion as of June 30, 1989. The increase mainly reflects one company's reclassification of assets totaling approximately $1.5 billion from its deferred debits account to its investment account in exchange for notes in a joint venture that were subsequently converted to bonds.

Total capitalization at June 30, 1990, rose a slight 0.9 percent, representing an increase of $3.0 billion over June 30, 1989. Because of one company's implementation of a leveraged employee stock option plan in which common stock was reclassified as notes, common stock increased only 0.1 percent. Long-term debt increased 2.2 percent from $168.4 billion to $172.1 billion, while retained earnings increased by 0.7 percent. These increases were offset somewhat by the retiring of preferred stock, which continued its decline as a percentage of capitalization, dropping by 4.4 percent.

Tables 1 and 2 are based on unaudited reports submitted by a sample of investor-owned electric utilities. The sample represents approximately 99.4 percent of the industry's total assets and 96.5 percent of its total revenues. The sample data are adjusted with the Standard & Poor's Utilitiy Compustat II database to represent the entire industry. The prior year data also are revised to reflect all company restatements.

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TECHNOLOGY REVIEW

NEW ALLOYS RESIST WEAR WITHOUT COSTLY COBALT

A new family of alloys developed for the Electric Power Research Institute provides manufacturers an alternative to the costly cobalt-based alloys used to resist wear in everything from jet engines to surgical staples.

"By eliminating the need for cobalt, these new alloys, called NOREM, could reduce the cost of making equipment more wear-resistant in a number of major industries," said EPRI Project Manager Howard Ocken. "Nationwide, we could make a dent in the billions of dollars spent every year to protect against wear and to replace worn parts."

Initial uses of the cobalt-free alloys will likely be in power plant valves and turbines where operating conditions most closely resemble those used in laboratory tests where the alloys first showed promise. In these and many other uses, wear occurs when parts rub together and fluids at high temperatures cause corrosion and erosion. In nuclear reactor applications, NOREM alloys will not become activated, which will reduce worker protection and maintenance costs. In agricultural and mining equipment, the alloys must resist wear caused by hard particles. To prevent compound wear, NOREM is welded or sprayed to form a thin layer over the surfaces to be protected.

Prior to the development of the new iron-based alloys, cobalt-rich alloys offered the best solutions for resisting wear. Cobalt, however, is a strategically important, scarce, and costly element, which is primarily imported from countries where political instability could threaten supplies.

The new alloys were derived from Nitronic 60™, one of the few types of stainless steels that exhibit excellent resistance to wear. Researchers evaluated many different alloy combinations, subjecting each new composition to a punishing series of tests. The main goal was to develop alloys with excellent resistance to galling wear, the type of damage that results when surfaces make contact under very high stresses. Tests confirmed that the new alloys retained their wear-resistant properties when produced as rods and powders, the most common product forms used by welders. Other applications requiring wear-resistant alloys will make use of NOREM castings.

EPRI has been granted a U.S. patent for the alloys. Stoody Deloro Stellite, a subsidiary of Thermadyne Industries, the world's largest producer of welding equipment and materials, was granted the first license to market the alloys. A second license was granted to ANVAL, the world's largest producer of gas-atomized metal powders. Both licensees are working on marketing plans and are offering the different product forms to interested parties. EP

Contributed by the Electric Power Research Institute.

STATISTICAL REVIEW

SECOND QUARTER SALES UP 2.8 PERCENT

Electricity sales to ultimate customers by investor-owned electric companies increased during the second quarter of 1990 by 2.8 percent over their second quarter 1989 level, growing from 475.3 million megawatthours to 488.6 million megawatthours. The sales growth contributed to a second quarter revenue increase of 3.8 percent, up from $31.1 billion to $32.3 billion.

The increase in sales occurred despite a slow-growing economy. Industrial activity as measured by the Federal Reserve Board Index of Production increased only slightly from an average of 108.6 in the second quarter of 1989 to 109.3 in 1990. Real GNP increased just 0.4 percent on an annual basis over the first quarter of the year. (GNP growth was revised downward from an original estimate of 1.2 percent.)

The commercial class saw the greatest quarter-to-quarter increase in sales, 3.7 percent. Residential sales were up 2.6 percent, and industrial sales, 1.7 percent.

The weather had little impact on sales growth during this year's second quarter, a period usually affected by both heating and cooling demand. The 3.0 percent decrease in heating degrees day compared to second quarter 1989 was offset by a 3.6 percent increase in cooling degree days.

The total number of ultimate customers increased 1.8 percent compared to the second quarter of 1989. The number of industrial customers rose 4.1 percent, the

Table 1
Second Quarter Customer, Sales, and Revenue Data for Investor-Owned Electric Utilities

	Three Months Ended June 30,			Twelve Months Ended June 30,		
	1990	1989	% Change	1990	1989	% Change
Number of Customers						
Residential	73,468,170	72,206,874	1.7	73,069,622	71,923,044	1.6
Commercial	9,241,041	9,024,351	2.4	9,174,391	8,977,285	2.2
Industrial	389,702	374,457	4.1	381,879	372,632	2.5
Street & Highway	143,842	131,822	9.1	138,028	131,414	5.0
Other Public Authorities	154,347	155,635	(0.8)	154,924	153,138	1.2
Railroads	24	22	9.1	23	22	4.5
Interdepartmental	497	462	7.6	473	464	1.9
Total Customers	83,397,623	81,893,623	1.8	82,919,340	81,557,999	1.7
Electricity Sales (MWh)						
Residential	146,488,885	142,761,693	2.6	660,401,728	654,196,276	0.9
Commercial	146,766,102	141,589,888	3.7	603,998,120	584,042,069	3.4
Industrial	179,053,064	176,065,173	1.7	707,997,591	697,611,343	1.5
Street & Highway	2,504,318	2,424,232	3.3	10,544,405	10,389,791	1.5
Other Public Authorities	12,750,721	11,389,360	12.0	49,321,623	45,619,507	8.1
Railroads	608,467	579,143	(27.0)	2,509,744	2,420,439	3.7
Interdepartmental	422,874	516,615	(18.1)	1,915,837	2,065,917	(7.3)
Total Sales	488,594,431	475,326,104	2.8	2,036,689,048	1,996,345,342	2.0
Revenues ($000)						
Residential	11,933,611	11,483,751	3.9	52,964,729	51,485,238	2.9
Commercial	10,818,360	10,307,533	5.0	44,203,860	42,115,669	5.0
Industrial	8,557,027	8,341,609	2.6	34,451,519	33,446,465	3.0
Street & Highway	306,455	299,451	2.3	1,225,312	1,188,506	3.1
Other Public Authorities	598,903	605,772	(1.1)	2,477,304	2,401,683	3.1
Railroads	38,377	36,827	4.2	161,809	152,638	6.0
Interdepartmental	27,601	29,544	(6.6)	102,978	121,175	(15.0)
Total Revenues	32,280,333	31,104,487	3.8	135,587,511	130,911,374	3.6

SOURCE: Edison Electric Institute, Statistics Department.

number of commercial customers rose 2.4 percent, and the number of residential customers rose 1.7 percent.

On an annual basis, the number of total customers grew 1.7 percent. Electricity sales grew 2.0 percent, and revenues grew 3.6 percent.

Average demand per residential customer increased a slight 0.8 percent during the second quarter. Average kilowatthour use for all major customer classes increased 0.9 percent. According to the Energy Information Administration's second quarter U.S. Energy Financial Developments, increased second quarter demand was due in part to lower real electricity prices. The report notes that between the second quarter of 89 and the second quarter of 90 electric utility prices grew less than the rate of inflation.

The average revenue per kilowatthour sold to all customers rose 1.0 percent from 6.54 cents to 6.61 cents in the second quarter of 1990. On an annual basis, the average revenue per kilowatthour sold increased 1.5 percent to 6.66 cents. EP

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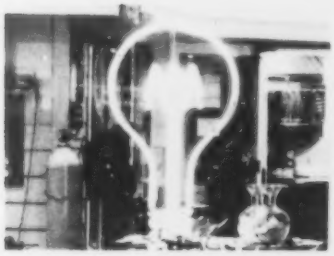

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Cover photo by Jerry Mesmer — Folio, Inc.

FINANCIAL REVIEW

STOCK INVESTMENT PLANS' CONTRIBUTION TO CAPITAL FORMATION

Stock investment plans raised almost $600 million in new money for investor-owned electric utilities in 1989 according to Edison Electric Institute's latest annual survey of the industry. As shown in the first column of Table 1, dividend reinvestment plans accounted for the bulk of the total, contributing $413.7 million, or 70 percent, of the $594.7 million.

It appears, however, that the survey results significantly underreport the amount of new money raised through stock investment plans. For example, EEI's Cash Flow Statement for 1989 indicates that the net amount of common stock new money for the year was $1,910.7 million. (See Financial Review in the September-October 1990 issue of *Electric Perspectives*.) Ebasco Sevices, which tracks only financings that are *not* part of Stock Purchase Plans, recorded $771.9 million of 1989 common stock financing. The resulting difference of over $1.1 billion suggests a higher level of 1989 new money common stock financing from investment plans than the $594.7 million reported in Table 1.

The under-reporting reflects the large decline in the number of companies responding to the 1989 survey. The decline also hampers comparisons with the 1988 data. Thus, the second and third columns of Table 1 report only the data provided by the 78 companies that responded to both the 1989 and the 1988 surveys, and the remainder of this review focuses on that data only.

In 1989, new issue capital formation for the 78 companies totaled $5.8 billion, down 19.6 percent from the $7.3 billion reported for 1988. Stock investment plans accounted for 10.0 percent of the new issue capital, down from 11.8 percent in 1988. In each year, dividend reinvestment plans contributed most of the total raised through stock investment plans—69.9 percent in 1989 and 70.9 percent in 1988.

Nevertheless, the total proceeds from the dividend reinvestment plans for the 78 companies dropped by $199.5 million in 1989 compared to 1988, a decrease of 32.7 percent. The overall dollar amount of such plans has declined because their deferred tax advantages to individuals expired in 1985 and because of the industry's changing capital requirements.

Table 1
New Issue Capital Formation from Stock Investment Plans and from Preferred Stock and Debt Financing

	All Respondents	78 Companies that Responded in Both Years	
	1989	1989	1988
Dividend Reinvestment Plan	$413,716,159	$409,943,099	$609,448,879
Employee Stock Purchase Plan	27,294,819	26,795,287	26,926,423
Employee Stock Ownership Plan	32,506,931	31,034,944	45,224,594
Employee Thrift & 401(k) Plans	91,247,588	89,011,546	144,715,583
Customer Stock Purchase Plan	29,937,711	29,449,262	33,749,144
Total Stock Investment Plans	$594,703,208	$586,234,138	$860,064,623
Public Offering	485,980,500	446,830,500	156,841,300
Other	3,318,483	3,039,283	1,319,801
Total Common Stock	$1,084,002,191	$1,036,103,921	$1,018,225,724
Preferred Stock	162,000,000	100,000,000	447,970,000
Debt Financing	5,545,673,636	4,710,573,636	5,805,382,346
Total Proceeds	$6,791,675,827	$5,846,677,557	$7,271,578,070

Source: Edison Electric Institute's Statistics Department

Changing capital requirements have prompted companies to go to market purchase plans and not to offer discounts on the market price of common stock dividends reinvested. Although as many as 26 companies offered discounts in 1986, only 7 did so in 1989.

Meanwhile, public offerings of common stock saw almost a three-fold increase in 1989, jumping to $446.8 million from the $156.8 million that the 78 companies reported for 1988. EP

Contributed by Edison Electric Institute's Finance and Accounting Department.

STATISTICAL REVIEW

RATE APPROVALS UP FOR FIRST HALF OF 1990

Twenty-eight rate cases, involving increases totaling $883.7 million on an annualized basis, were approved by commissions for investor-owned electric utilities during the first six months of 1990. The dollar total is a 33.6 percent increase over the $661.4 million approved during the previous six months.

State and local commissions approved an average of 56.6 percent of the amounts requested by utilities in their rate increase filings, up from the 49.2 percent average of the preceding eight quarters. Rate decrease approvals dropped significantly from a total of $479.4 million in the last half of 1989 to $163.3 million in the first half of 1990. The average rate decrease approved per rate order was $16.3 million, while the average rate increase approved was $31.6 million.

Rate increase amounts filed by electric utilities during the first half of 1990 totaled $2,084.5 million, a decrease of 19.1 percent compared to the $2,528.7 million filed during the last half of 1989. It is anticipated that the general

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Table 1
Electric Rate Actions
January through June 1990

	Number of Actions		Dollar Amounts($000)	
	Increases	Decreases	Increases	Decreases
Pending as of 6/30/90				
Filed During Period [1]	44	5	2,084,507	106,212
Pending from Previous Periods	35	2	2,369,263	45,357
Total Pending	79	7	4,453,770	151,569
Approved During Period [1]				
Nonfinal [2]	4	0	2,231	0
Final	24	10	881,474	163,330
Total Approved	28	10	883,705	163,330
Withdrawn During Period	0	0	0	0
Denied During Period [3]	1	0	12,225	0

Notes
1. Approved changes that were filed during the period are only counted in the approved category.
2. Includes interim increases not subject to refund, increases under bond, and increases subject to refund.
3. Only final denial of any increase in rates is reported as denied. When a utility is granted less of an increase in rates than it filed for, the remainder is not reported as denied. When a utility seeks a rate increase and the commission in its final order instead imposes a rate decrease, the amount of the increase that the utility had sought is reported as denied and the decrease imposed by the commission is reported as an approved decrease.

Source: Edison Electric Institute's Rate Regulation Department.

downward trend in the dollar amount of increases filed will continue for the near term, due mainly to the current reduced level of construction in the industry.

Despite the drop in the dollar volume of rate increase cases being filed, the number of cases filed has increased: 44 rate increase cases were filed in the first half of 1990 compared to 37 in the last half of 1989. At this pace, the total number of rate increase filings in 1990 should surpass the 54-case annual average recorded over the last three years.

Although the number of rate increase filings is up for the first half of 1990, the requested average return on common equity declined. Utilities filing applications with state commissions during the period requested an average return on common equity of 13.37 percent, down 24 basis points from the 13.61 percent requested on average during the last half of 1989. The average return on common equity actually authorized during the first six months of 1990 was 12.78 percent, 10 basis points lower than the 12.88 percent authorized during the previous six months.

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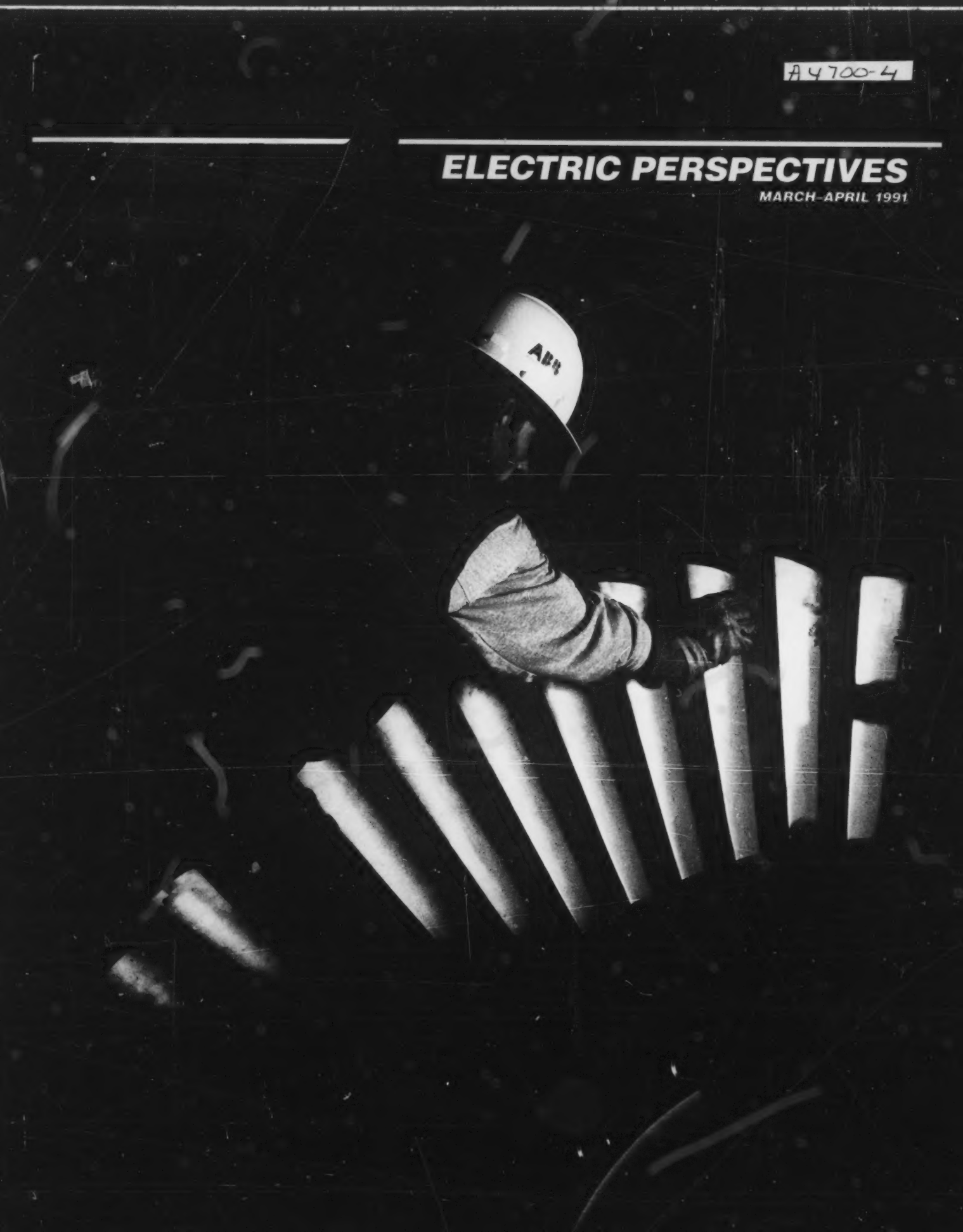
ELECTRIC PERSPECTIVES

MARCH-APRIL 1991



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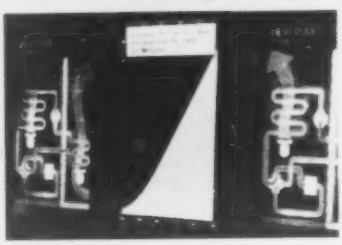

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Cover photo courtesy ASEA Brown Boveri.

The Greening of America

If electric utilities are to meet their customers' needs and expectations, they must recognize that America's environmental values are changing in profound and lasting ways.

In this two-part series, Gene Pokorny reviews the results and implications of a recently completed customer research study on electric utilities, the environment, and customer satisfaction. This first article focuses on how Americans look at both general and specific environmental issues. The second, to be published in the May-June issue of EP, focuses on the performance evaluations and expectations that customers have for their utility's environmental activities.

The Greening of America has become a major topic of discussion in the offices and boardrooms of corporate America as well as legislative meeting rooms and corridors throughout the country. Consumer product manufacturers everywhere are redesigning and repackaging their products so they can be marketed as having new and improved environmental benefits. *Biodegradable*, *recyclable*, and *all-natural* are three of the hottest icons in advertising, and there may well be a run on the hardware store for green paint.

Is all this mere hype and a passing fancy? Is the environmental movement just another creation of the media—or worse yet, the politicians—or is a new and lasting environmental consciousness truly growing? Has a fundamental change on the landscape of the consumer mind occurred that business and industry—including electric utilities—must understand, accept, and respond to in the years ahead if they want to satisfy more fully their customers' needs, wants, and preferences in the marketplace?

To understand the values, beliefs, and opinions residential customers have about environmental issues, Edison Electric Institute commissioned Cambridge Reports/Research International to undertake a two-stage customer research study in 1990. The first stage was to review already existing Cambridge Reports/RI consumer and public opinion data in the environmental area to uncover the major trends and their implications.

The second stage was to conduct a customer opinion study specifically designed to uncover how residential customers think about and evaluate a set of environmental issues, many directly related to utility operations—electricity generation, acid rain, global climate effects, disposal of nuclear wastes, and EMF. Those findings are reported in this first article.

In addition, the study explored how customers perceive their utility's current environmental performance, as well as what customers' expectations are for future environmental performance. And lastly, the study looked at what kinds of elec-

The recent avalanche of business and consumer magazines devoted exclusively to environmental issues testifies to the emergence of a new environmental consciousness within mainstream America.

Gene Pokorny is Chairman of Cambridge Reports/Research International.

A GUIDE TO REDUCING WATER POLLUTION AT HO
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tric company environmental programs and activities can best demonstrate a commitment to environmental quality and preservation. Those topics will be covered in the second half of this series.

The interviewing for the 1990 *Electric Utilities and the Environment Study* was done from September 4-17, 1990. Twelve hundred and fifty interviews were conducted with a sample designed to represent the adult American population.

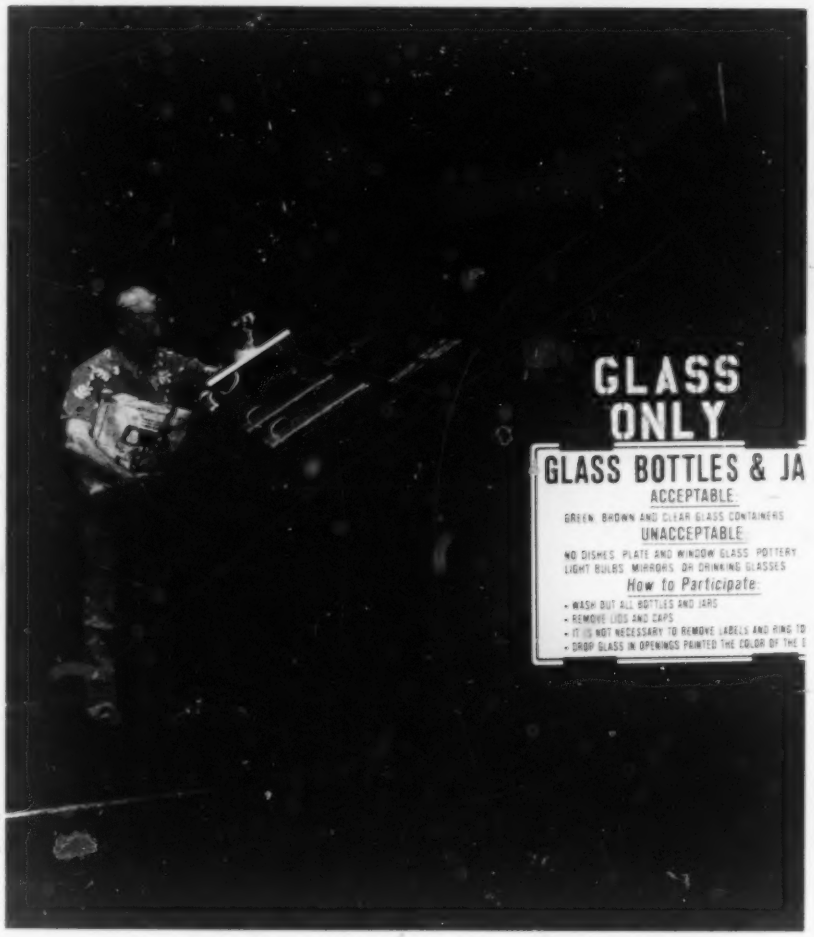
The Environmental "Climate of Opinion"

Four facts about the environmental "climate of opinion" facing electric utilities in this decade emerged from our review of existing consumer and public opinion research on environmental issues. This review looked at over 3,000 survey questions asked in our syndicated national surveys of the American public since 1974 and the results to more than 300 custom surveys on environmental issues done in the last 10 years.

Fact 1. Over the last few years a sea change in American environmental attitudes has occurred. Not only are Americans dramatically more concerned about a wide range of environmental issues than they were just a few years ago, but they also increasingly perceive "environmental protection" as "environmental *self*-protection."

Fifty-five percent of the Americans in a recent national survey say environmental quality has decreased in the last five years; three years ago only about 30 percent believed that to be the case. Thus, whether rightly or wrongly, Americans perceive that things are getting worse as far as environmental quality is concerned.

Twenty years after the first Earth Day, Americans gathered together again to demonstrate their growing concern about the environment.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• REMOVE LIDS AND CAPS
• IT IS NOT NECESSARY TO REMOVE LABELS AND RING TO
• DROP GLASS IN OPENINGS PAINTED THE COLOR OF THE

Over 80 percent of all Americans recycle something in their households.

Fifty percent of Americans say no tradeoff is necessary between the societal goals of environmental protection and economic growth. If a tradeoff is necessary and we force Americans in a survey to choose, they say they will sacrifice economic growth for the sake of the environment by a 2-to-1 margin.

Of course, as we experience a recession in 1991, these tradeoff numbers will probably shift somewhat to the growth side. That is a typical pattern in times of economic stress, perhaps analogous to the downturn experienced in the demand for electricity during recessions.

Nonetheless, for many Americans, environmental protection has become a more immediate concern, a more personal concern than it used to be. What used to be called environmental protection has become in their eyes environmental *self*-protection. Although this is a turn of phrase, it captures a very fundamental change occurring in how Americans think about the environment and evaluate actions meant to preserve and enhance environmental quality.

In fact, recent research we have been doing on consumer values shows environmental protection has become a fundamental, a basic, a core American value. It has moved up the value hierarchy from being a means to a greater end to being an intrinsically valuable end in and of itself. Environmental quality and preservation are now identified and associated in people's minds with other primary or core values—those basic things that we feel are intrinsically desirable and of worth. Other core values—things that are ends, not means—include personal health, family security, and the well-being of children.

The implication of this change is that, as environmentalism becomes a core value and more closely linked to other core values, it will be far less likely than it has been in the past to be traded off for other core values—like family economic security—even in times of economic downturn or uncertainty.

Fact 2. A significant and growing number of Americans are becoming "green consumers" in their buying behavior and "green voters" in their political activity. This "green" segment of the overall population is better educated and has generally higher income than average. These consumers speak loudly in the economic marketplace and the political arena—and in some sense, they set the agenda for both.

To illustrate this "fact," let's look at a few pieces of opinion research we have recently uncovered in national consumer surveying. First, approximately 18-25 percent of adult Americans are now "green consumers" (as defined by a scaling technique we use in our syndicated national consumer studies). One year ago the size of this identical segment was 13 percent.

But what are these people doing that makes them "green"? If the change from environmental protection to environmental self-protection is real, then our consumer surveys should reveal actual behaviors that can be interpreted as giving witness to this perceived "call to action" to protect the environment.

That, in fact, is exactly what we are seeing. Ninety percent of the greens say they are making changes in their daily consumer behavior because of their environmental concerns. (Sev-

enty-five percent of all Americans say that they are doing this; the percentage was 57 in 1989.)

Eighty-three percent of the greens say they will pay more per month for the goods and services that they buy in order to have them be more environmentally safe. (Seventy-two percent of all Americans say they will pay more; 52 percent said so in 1989. How much more will they pay? In 1989, Americans said $9 a month. Today the comparable figure is $37 per month.)

Sixty-two percent of the greens say—and this is particularly important as it relates to corporate environmental performance and image—they are trying to avoid doing business with companies they perceive to be hurting the environment. (Fifty percent of all Americans say they are doing this; only 30 percent said so in 1989.)

One overall point needs to be considered when thinking about these numbers and the consistent, dramatic way in which they changed in the last year: these opinions and the changes in them were recorded at the same time the economy was slipping into recession. Thus, although a recession may slow for a while some changes occurring in environmental attitudes and behaviors, it will not stop them.

Of course, some observers point to the fact that a number of 1990 environmental initiatives and referenda failed to win voter approval, particularly the widely publicized "Big Green" initiative in California. They interpret those results as proof that environmentalism is dead. However, this simplistic interpretation forgets that Americans historically reject initiatives by about a 2-to-1 ratio, largely because of their tendency to practice a philosophy in the voting booth that cautions, "when in doubt, vote no."

One must realize that initiatives and referenda are primarily important as indicators of the issues of importance to Americans in general and activist Americans in particular. They are indicators of what is on the national agenda for public and private sector discussion and, ultimately, resolution.

The public thinks that we could recycle 57 percent of all the wastes produced in the United States if we really tried.

By that criterion, the 1990 election with its plethora of environmental initiatives shows the rise in importance of environmentalism. While success is always better than failure in elections, a win/loss tally on last year's environmental votes is a secondary issue—primary is that the votes were held at all.

Fact 3. Within the sea change of environmental attitudes that is occurring, certain issues, practices, and behaviors have become "symbols" of the broader perceived problem. In large part, for many Americans right now waste issues symbolize the environmental problems our society faces. Packaging, in turn, symbolizes waste. And plastics symbolize wasteful man-made packaging. For many Americans, plastics are the ultimate villain in this old-fashioned morality play.

In fact, 75 percent of consumers believe the phrase "throwaway society" describes contemporary America. And they believe our throwaway expedient is a serious environmental and social problem that somehow must be addressed.

Thirty-one percent of us say "waste issues" are the single-most important environmental problem facing America—landfills, nuclear and other hazardous waste, the recycling problem, waste disposal, solid wastes, litter. The second most important environmental problem is "water pollution" at 11 percent; air pollution follows at 10 percent.

The public now perceives the use of fossil fuels as dangerous—and, for many, oil in particular has become a four-letter word.

Sixty-six percent of Americans believe the environmental risks of using plastics outweigh their benefits as defined in terms of convenience, safety, and durability. As recently as 1986, that 66 percent was only 31 percent.

Recycling, including reuse, is seen as the answer to the waste problem. It is the preferred solution, even more so than biodegradability. For example, 85 to 90 percent of Americans currently favor mandatory recycling in their communities. Eighty-four percent say they are recycling something today in their households—cans, bottles, or pa-

Table 1

Threats Behind the Four Environmental Dimensions

Global Ecology
Loss of wilderness areas
Threats to endangered animal species
The pollution of our rivers, lakes, and oceans
Air pollution
Chemical plants
The use of packaging and other materials that cannot be recycled
Contamination
High-level nuclear waste
Low-level nuclear waste
Oil spills
Using additives and pesticides in food production
The disposal of solid waste in a landfill
EMF
Electric and magnetic fields from household appliances
Electric and magnetic fields from electric transmission lines
Electricity generating plants
Atmosphere
Global warming from the greenhouse effect
Depletion of the ozone layer in the atmosphere
Acid rain
Air pollution caused by cars and trucks

Table 2

Customer Segments Based on Threat Ratings of Environmental Dimensions

	Customer Segments		
	Low Threat	Moderate Threat	Serious Threat
Global Ecology	5.3%	10.6%	84.1%
Contamination	9.4%	12.7%	77.9%
EMF	49.4%	26.0%	24.6%
Atmosphere	5.2%	12.2%	82.6%

per—and 82 percent say they are trying to buy recycled consumer products to the extent that they are available.

Finally, Americans think, "if we really try," we could recycle 57 percent of all the wastes generated in this country. Just one year ago, the median estimate of how much we could recycle was 27 percent—an amazing change in such a short time.

From all this it should be clear—if plastics are the villain in the play, recycling is the *deus ex machina*.

Fact 4. How Americans think about and evaluate energy issues, and even their energy usage, is increasingly linked—in ways we've never seen before—with the environmental benefits and risks they perceive to be associated with different energy sources, energy development priorities, and energy usage patterns. To a large extent, in today's climate of opinion when you talk with Americans about energy issues, you are also talking to them about environmental issues, whether you realize it or not. The two go hand in hand.

Some of the evidence that leads us to this conclusion is the fact that many Americans now see fossil fuel use in general as dangerous to society because of its perceived negative environmental side effects. These perceptions are particularly strong for oil and coal and significantly less so for natural gas, which is still seen generally to be the "best" of the fossil fuels' "bad lot."

The perceived negative environmental effects of fossil fuels are twofold. First, Americans believe the usage of fossil fuels causes environmental damage (oil spills, acid rain, ozone depletion). Second, many Americans believe their usage depletes a finite resource, and this fact is itself an environmental negative. They are non-renewable—that is,

they are not sustainable over the long term. Thus, the bottom line for fossil fuels comes down to a two-count indictment: "I'm hurting my kids by using them" and "By using them now I'm also denying future possibilities to my children's children."

Looking at oil more specifically, which some utilities still use to a limited extent as an energy source for electricity generation and which all utilities use as consumers of oil-based products, we find marked changes in public attitudes from those we saw in research done during the earlier "oil crises." To put it simply, in the earlier oil crises, Americans were negative about oil companies, but they liked oil. Here in 1990 the problem is not just oil companies, but now the product itself—oil. Oil is increasingly becoming for many Americans a four-letter word. They know they can't currently live without it; they know they're dependent upon it. Yet they worry about the environmental consequences of its usage and resent their very dependency upon it.

In many ways, the Exxon Valdez is to oil what TMI was to nuclear power. The event has changed forever the way Americans think about and evaluate oil and related issues.

These four facts that emerged from our review of recent consumer opinion research lead to a simple overarching conclusion. Fundamental changes have and are taking place in American environmental values, beliefs, and opinions. New consumer environmental needs, wants, and preferences exist today that simply were not present before in the American economic and political marketplace. And if electric utilities expect to earn customer satisfaction in the 1990s, they must meet these desires through the products and services that they sell and through the ways that they operate.

How Customers Think About Environmental Issues Facing Utilities

One of the key objectives of the 1990 *Electric Utilities and the Environment Study* was to explore how residential customers think about specific environmental issues, some of critical interest to electric utilities. To do this, we asked respondents to rate the severity of 19 potential threats to the overall quality of the environment. The threats ranged from acid rain to oil spills, from non-recyclable packaging to global climate effects, and from loss of wilderness areas to electricity generation plants. We also included two EMF issues—"electric and magnetic fields from household appliances" and "electric and magnetic fields from electric transmission lines."

Both green and non-green consumers perceive water pollution to be among the top threats facing the environment.

After analyzing these ratings through the statistical technique of factor analysis, we found that most of the potential threats are strongly correlated with one of four underlying dimensions: global ecology, contamination, EMF, and atmosphere. Table 1 presents the key environmental threats that make up these dimensions.

What's particularly interesting to note here is that for all customers the three threats that are very specific to electricity and contain the word "electric" in their description are grouped together under the EMF dimension, whereas other threats that the utility industry is concerned about are scattered throughout the other three dimensions. For example, air and water pollution are in the global ecology area; nuclear waste issues are in the contamination area; and global warming, ozone depletion, and acid rain are in the atmosphere area.

On each of these four environmental dimensions, we divided residential customers into groups or segments according to their responses into low, moderate, and high ranges. As shown in Table 2, very large majorities (78 to 84 percent) of all customers see serious threats to the environment posed by the issues grouped together in the global ecology, contamination, and atmosphere areas—many of which are closely related to the operation of electric utilities. In contrast, *at this time*, only 25 percent of residential customers see the EMF issues as equally serious threats.

Demographically, clear patterns emerge when we look at which Americans see environmental threats as very serious. On all of the four environmental dimensions, those most likely to be in the "serious threat" segment are women, members of larger households, and customers with lower incomes and educational attainment.

In looking at age differences, the patterns are less clear. Younger

For many Americans, waste issues symbolize the environmental problems our "throwaway" society faces.

Americans (particularly those between ages 18 and 25) are more likely to see global ecology, contamination, and atmosphere threats as serious, whereas EMF threats are seen as most serious by those over 65 years of age.

Geographically, we find that global ecology threats are seen as most serious in the Industrial, Midlands, and Northeast regions. Contamination and atmosphere threats are seen as most serious in the Northeast and Industrial regions, while EMF threats score highest in the Pacific region.

Greens versus Non-Greens

Green consumers are especially interested in environmental issues, and they play important roles in setting and influencing the country's environmental agenda. Compared to the average consumer, this customer segment has disproportionately higher income, has attained higher levels of education, and is younger and more politically active.

When we look only at how these green customers evaluate the 19 potential environmental threats, we find, not surprisingly, that they rate all of them as more serious than customers do generally. The top four threats for greens are the same, however, as the top four for all customers—the pollution of our rivers, lakes, and oceans; air pollution; high-level nuclear waste; and depletion of the atmosphere's ozone layer.

Factor analysis of the ratings of these issues given by green consumers reveals that they think about them in ways significantly different than do utility customers as a whole. Whereas all customers think about the three electricity-related issues labelled "EMF" along one dimension, the greens think about them along two, more discrete dimensions—one combines the two potential EMF threats together and the other combines "electricity generating plants" together with "acid rain." In other words, this special customer segment clearly associates acid rain with electricity generation and sees EMF issues as a grouping unto themselves, not bundled with or quite like any other environmental issues we looked at in the study.

Perhaps even more significant is what a similar factor analysis reveals when we look at how non-green customers perceive and think about these same threats. Compared to greens, these customers are typically less educated, have lower income, and are older and more inclined to see all environmental threats in general as being threats to their immediate health and safety. Unlike the greens, these customers keep the threats we labelled "EMF" together.

It is important to note, however, that these currently non-green customers add threats to the EMF grouping from the contamination grouping as defined by all customers. This finding reveals that these non-green customers think about and evaluate potential EMF threats—to the extent they are aware of them—or perhaps more importantly, as they become aware of them—by analogy or in association with chemical or substance contamination issues, like food additives and pesticides. Instead of thinking about EMF issues as a unique and discrete set of problems as do the greens, these customers, who make up the vast majority of every utility's residential customer base, see them as yet another contamination problem like the others they are already worrying greatly about.

If it continues and hardens in the public mind, this understanding—or lack of it—could pose enormous difficulties for utility activities and communications on EMF issues in

the years ahead. Rational public debate and resolution of EMF issues will probably not be easy in the best of worlds, given the potential health and economic stakes involved and the state of factual knowledge. The debate can only be hindered if the associations, metaphors, and analogies used by most utility customers to think about the problem are inappropriate.

The Opportunity Within the Challenge

The emerging environmental "climate of opinion" in America presents a very real challenge to electric utilities. But, as almost always, within the challenge is also an opportunity if we are only wise enough to see it.

Concerns about the environment are clearly on the rise and transcend the conventional demographic, regional, and ideological divisions that characterize American society. This change in environmental attitudes should be taken for what it is—fundamental and basic. Of course, specific environmental attitudes will ebb and flow as events and issues come and go, be they recessions or Persian Gulf crises. But there has been and there will continue to be a secular, upward slope in the long term trend lines of environmental worries and demands.

Consequently, electric utilities are being asked to meet new consumer environmental needs, wants, and preferences in both their operations and products. That's the challenge.

The opportunity is to rise to the occasion and now make superior environmental performance a competitive advantage for electricity in general and electric companies in particular. To market customer satisfaction in the 1990s, the industry must understand how residential customers currently perceive their own electric utility's environmental performance. Then, with that understanding in mind, the industry must go the next step and identify what specific utility programs and activities can best demonstrate to varying customer segments an electric company's core commitment to environmental values and concerns. Those two topics are the subject of the next feature in this series.

Strategic Marketing
Demand-Side Management
Customer Satisfaction

Making these words come to life in an electric company is not easy.

Yet it's essential for success in today's increasingly deregulated and competitive energy marketplace.

Understanding your customers' needs, wants, and attitudes plays an absolutely vital role in turning these words and concepts into realities—specific company programs and actions that build strong customer loyalty to you as their preferred provider of electricity.

From doing more than 700 research and consulting projects for over 100 utilities—in areas such as customer service delivery, marketing, demand-side management, communications, and supply-side planning and forecasting—we've also learned that customer needs, attitudes, and behavior are constantly changing.

Well-designed customer research and analysis is the best route to understanding these changes, meeting the challenges they present, and ultimately profiting from them.

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Implementing the Statement

Most investor-owned electric utility companies have benefit plans covered by FASB's new Statement, so understanding and implementing it will be an industrywide concern over the next few years. Each company will need a clear understanding of its current postretirement benefit costs, including detailed information on the past claims and demographics of plan participants. Needed actuarial projections will have to be supported, both initially and on an ongoing basis, by such assumptions as trends in healthcare cost rates. Companies will also need to consider prefunding liabilities and what (if any) tax deductions can result from such prefunding. Likewise, they must develop strategies for rate recovery of the costs of postretirement benefits.

Obviously, implementing Statement No. 106 will be a complex and costly task. Ultimately, the new standards will significantly change individual companies' financial statements. An interdisciplinary effort involving personnel from accounting, human resources, taxation, rate regulation, data processing and legal areas will probably be required to ensure proper compliance.

EARNINGS PER SHARE UP 1.3 PERCENT FOR THIRD QUARTER

Investor-owned electric utility earnings per share before extraordinary items increased 1.3 percent from $0.77 in the third quarter of 1989 to $0.78 in the third quarter of 1990. (See Table 1.) The increase was due primarily to the 3.8 percent increase in sales experienced during the quarter and the related 4.5 percent increase in electric operating income. (See "Statistical Review," this issue.)

Lower allowance for funds used during construction combined with lower phase-in plan accruals, however, to dampen the impact of the growth in operating income. After-tax writeoffs for the quarter decreased net income by $1,061 million. Without the writeoffs, earnings per share would have increased to $0.93 for the quarter. Nonetheless, writeoffs also decreased net income by a similar amount ($1,041 million) in the third quarter of 1989. Thus, their impact on quarter-to-quarter comparisons was essentially neutral.

Income Statement

Total electric operating revenue increased by 6.4 percent from $39.9 billion in the third quarter of 1989 to $42.5 billion in the third quarter of 1990. Overall sales growth and the individual circumstances of three companies led to the increase. One company increased operating revenues through an incentive rate structure. Two companies increased revenues by successfully entering nuclear units into their ratebases.

Total electric operating expenses increased by 7.1 percent on a quarter-to-quarter basis. The largest increases occurred in expenses related to purchased power and net interchange, which jumped by $567 million, and other operation and maintenance, which jumped by $928 million. Those increases accounted for fully 70 percent of the $2,141 million increase in total electric operating expenses experienced in the third quarter of 1990 compared to the same quarter of 1989.

Purchased power and net interchange expenses, which jumped 22 percent, increased mainly because of some companies' need to purchase power during plant outages and because of power purchases from non-utility producers. A variety of factors caused other operation and maintenance expenses to rise: startup costs associated with the recent completion and operation of two new nuclear units, the implementation of an early retirement program at one company, and expense adjustments related to seasonal rates made by several companies.

The 7.1 percent increase in electric operating expenses was accompanied with a 6.4 percent increase in electric operating revenue, leading to a slight increase in the quarter's operating ratio which rose to 76.3 percent compared to the 75.8 percent recorded for the third quarter of 1989. Electric operating income grew by 4.5 percent, from $9.6 billion in 1989 to $10.1 billion in 1990.

Allowance for funds used during construction (AFUDC) dropped by 19.3 percent on a third-quarter-to-third-quarter basis. The drop is due to the completion of two plants by two companies that had been

Table 1
Investor-Owned Electric Utility Industry Statement of Income
(Millions of Dollars)

	Three Months Ending September 30,			Twelve Months Ending September 30,		
	1990	1989r	% Change[3]	1990	1989r	% Change[3]
Total Electric Operating Revenue[1]	$42,499	$39,925	6.4	$145,508	$139,351	4.4
Electric Operating Expenses						
Fuel	$8,947	$8,724	2.5	$32,444	$31,484	3.0
Purchased Power & Net Interchange	3,142	2,575	22.0	9,835	8,337	18.0
Other Operation & Maintenance	9,747	8,819	10.5	38,840	37,028	4.9
Depreciation & Amortization	3,879	3,797	2.2	15,299	14,953	2.3
Costs Deferred Under Rate Phase-In	(65)	(168)	(61.4)	(498)	(788)	(36.8)
Taxes Other Than Income Taxes	3,059	2,868	6.7	11,336	10,777	5.2
Income Taxes: Federal & Other	3,006	3,099	(3.0)	6,922	6,807	1.7
Deferred Income Taxes	720	616	16.8	2,064	2,111	(2.2)
Investment Tax Credits, Net	(16)	(54)	N.M.	(100)	(400)	N.M.
Total Electric Operating Expenses	$32,418	$30,277	7.1	$116,140	$110,309	5.3
Electric Operating Income	$10,081	$9,649	4.5	$29,368	$29,041	1.1
Other Utility Operating Income	0	7	N.M.	1,151	1,280	(10.1)
Total Utility Operating Income	$10,081	$9,656	4.4	$30,519	$30,322	0.7
Other Income & Deductions, Net	$(471)	$(521)	$(9.6)	$(486)	$(1,988)	(75.6)
Phase-In Deferrals	176	280	(36.9)	784	1,040	(24.6)
Allowance for Other Funds Used During Construction	264	286	(7.7)	1,190	1,219	(2.4)
Total Income Before Interest Charges	$10,050	$9,700	3.6	$32,007	$30,593	4.6
Interest Charges						
Interest on Long-Term Debt	$3,883	$3,846	1.0	$15,430	$15,165	1.7
Other Interest Expenses & Charges	392	321	22.0	1,390	1,251	11.1
Allowance for Borrowed Funds Used During Construction	(275)	(382)	(28.2)	(1,061)	(1,320)	(19.6)
Net Interest Expenses & Charges	$4,000	$3,785	5.7	$15,760	$15,097	4.4
Net Income Before Extraordinary Items	$6,050	$5,916	2.3	$16,247	$15,497	4.8
Extraordinary Items	(36)	(72)	(50.6)	(109)	(116)	(5.9)
Cumulative Effect of a Change in Accounting Principle	1	(122)	N.M.	14	(158)	N.M.
Net Income	$6,015	$5,722	5.1	$16,152	$15,223	6.1
Preferred Dividends Declared	503	530	(5.1)	2,050	2,132	(3.9)
Net Income Available for Common	$5,512	$5,191	6.2	$14,102	$13,091	7.7
Common Dividends Declared	3,102	3,084	0.6	12,436	12,322	0.9
Additions to Retained Earnings	$2,410	$2,107	14.4	$1,666	$768	116.8
Average Shares Outstanding (Millions)	7,092	7,005	1.2	7,098	6,991	1.5
Earnings Per Share Before Extraordinary Items and the Cumulative Effect of a Change in Accounting Principle[2]	$0.78	$0.77	1.3	$2.00	$1.91	4.7
Earnings Per Share After Extraordinary Items and the Cumulative Effect of a Change in Accounting Principle[2]	$0.78	$0.74	5.4	$1.99	$1.87	6.4
Common Dividends Per Share[2]	$0.44	$0.44	0.0	$1.75	$1.76	(0.6)

Source: Edison Electric Institute Survey Data and Standard & Poor's Compustat II Database Service.

[1]Revenues are adjusted for intra-industry electricity sales for resale.
[2]Based on average shares outstanding as reported to Edison Electric Institute by survey respondents and adjusted for stock splits.
[3]Percent changes may reflect independent roundings.
r--revised.
N.M.--Not meaningful.

Table 2
Investor-Owned Electric Utility Industry Balance Sheet
(Millions of Dollars)

Assets	September 30, 1990	September 30, 1989r	% Change[2]
Utility Plant[1]			
Utility Plant (Including Nuclear Fuel)	$508,407	$475,680	6.9
Less Accumulated Depreciation	153,966	139,984	10.0
Total	$354,441	$355,696	5.6
Construction Work in Progress	25,335	36,646	(30.9)
Net Utility Plant	$379,776	$372,342	2.0
Investments	29,235	24,976	17.1
Current Assets	44,674	42,068	6.2
Deferred Debits	33,439	32,267	3.6
Total Assets	$487,124	$471,653	3.3
Capitalization & Liabilities			
Capitalization			
Common Stock	$93,450	$93,025	0.5
Retained Earnings	55,318	53,086	4.2
Preferred Stock	25,774	26,080	(1.2)
Long-Term Debt	172,155	169,864	1.3
Total Capitalization	$346,697	$342,055	1.4
Current Liabilities			
Short-Term Debt	$10,376	$7,944	30.6
Long-Term Debt Due Currently	5,899	4,978	18.5
Other Current Liabilities	34,225	31,302	9.3
Total Current Liabilities	$50,500	$44,224	14.2
Deferred Credits			
Capital Lease Obligations, Non-Current Portion	$4,722	$5,223	(9.6)
Accumulated Deferred Income Taxes	51,253	47,767	7.3
Accumulated Deferred Investment Tax Credits	15,690	16,237	(3.4)
Other Deferred Credits	18,262	16,147	13.1
Total Deferred Credits	$89,927	$85,374	5.3
Total Capitalization & Liabilities	$487,124	$471,653	3.3

Source: Edison Electric Institute Survey Data and Standard & Poor's Compustat II Database

[1] Includes non-electric utility plant.
[2] Percent changes may reflect independent roundings.
r-revised

booking large amounts of AFUDC during construction. AFUDC as a percentage of net income available for common declined from 12.9 percent to 9.8 percent. On an annual basis, AFUDC was 16.0 percent of earnings for the year ending September 30, 1990.

The third quarter's pre-tax interest coverage ratio (before extraordinary items and excluding AFUDC) was 3.16, a 0.6 percent increase over the 3.14 recorded for the third quarter of 1989. The ratios including AFUDC for the third quarters of 90 and 89 were 3.28 and 3.30, respectively. For the twelve months ending September 30, the pre-tax interest coverage ratios excluding AFUDC were 2.36 for 1990 and 2.31 for 1989.

Return on average common equity before extraordinary items and accounting changes increased to 9.6 percent for the year ending September 30, 1990, up from 9.1 for the previous twelve months. The change reflects higher earnings, which were, in turn, related to lower writeoffs.

Balance Sheet

Total utility plant increased 6.9 percent from $475.6 billion at the end of third quarter 89 to $508.4 billion a year later. (See Table 2.) The significant increase was related primarily to the completion and placement into operation of two nuclear plants. A corresponding 30.9 percent decline in construction work in progress was also recorded for the period.

Investments for the industry increased 17.1 percent to $29.2 billion, up from the $24.9 billion of September 30, 1989. Investments in non-utility subsidiaries and energy-related partnerships contributed to the increase, as did one company's exchange of assets for the notes and bonds of a joint partnership.

On a quarter-to-quarter basis, the common equity capitalization ratio increased slightly from 42.7 percent to 42.9 percent. The portion of preferred stock in the industry's capitalization ratio declined from 7.6 percent to 7.4 percent. Total capitalization rose by 1.4 percent, representing a $4.6 billion increase over September 30, 1989. Common stock increased a slight 0.5 percent. The slower than usual growth in common stock reflects some companies' implementation of stock repurchase programs. Long-term debt increased by 1.3 percent, while retained earnings increased by 4.2 percent.

Tables 1 and 2 are based on unaudited reports submitted by a sample of investor-owned electric utilities. The sample represents approximately 98.7 percent of the industry's total assets and 98.1 percent of its electric utility revenues. With the use of the Standard & Poor's Utility Compustat II database, data are adjusted to represent the entire investor-owned electric utility industry. The data have been revised to reflect all company restatements. EP

Contributed by Edison Electric Institute's Finance and Accounting Department.

TECHNOLOGY REVIEW

UTILITY-MANUFACTURER ALLIANCE PROMOTES NEW WIND TURBINE

On December 4, 1990, Niagara Mohawk Power Corporation joined together with Pacific Gas & Electric Company, the Electric Power Research Institute, and U.S. Windpower, Inc. to expand the potential for wind-generated electricity across the United States.

The consortium is developing an advanced 33-meter variable-speed wind turbine that reduces the cost and improves the power quality of clean, renewable wind energy.

"This is the first time an alliance has been formed between a major wind turbine manufacturer and utility users on the East and West Coasts," said Dr. Edgar DeMeo, EPRI Program Manager. "What's learned can be more quickly transferred between the manufacturer and the users."

The five-year development project, which was first begun in December 1989, will cost more than $20 million. The majority of the funding will be provided by U.S. Windpower, the world's largest manufacturer, developer, and operator of wind turbines. In 1990 alone, U.S. Windpower's turbines produced more than 760 million kilowatthours, enough power to meet the annual needs of 125,000 homes.

The technological advancements of the new turbine enable it to capture more energy from the wind than traditional wind turbines by operating at variable rotor speeds to optimize energy capture at low and high speeds. The electronic control system reduces stress on the components, increasing the turbine's useful life. Both improvements significantly in-

crease the efficiency and effectiveness of wind-generated electricity.

"This advanced turbine system will reduce the cost of wind-generated electricity, making it competitive with other methods of power generation," said Carl Weinberg, Manager of Research and Development for PG&E.

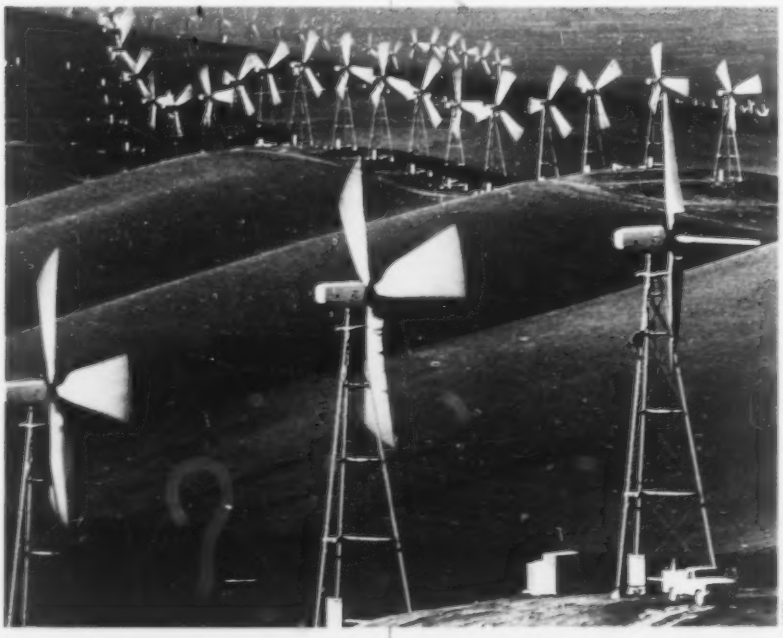
"It is especially important in light of events in the Middle East that we explore the potential of wind energy," explained Andrew M. Vesey, Director of Research and Development for Niagara Mohawk. "We have conducted wind speed studies at various sites that indicate a strong potential for wind energy development."

A prototype turbine, installed in California's Altamount Pass in 1989, is already demonstrating its ability to reduce costs and increase energy capture. Niagara Mohawk plans to test two of these advanced turbine units at an eastern Lake Ontario site beginning in 1992. The exact site will be selected in late 1991.

"The economics are right, the technology is proven, and the energy is clean," said Dale Osborn, President of U.S. Windpower.

Other U.S. locations with the capacity to produce substantial wind-generated electricity include Hawaii, Vermont, Maine, the Great Plains region, Colorado, the Texas Panhandle, Eastern Washington, Idaho, and North and South Dakota, according to EPRI's DeMeo. DeMeo also expects significant growth in international markets over the 1990s. EP

Contributed by the Electric Power Research Institute's Public Information Department.



A prototype of the U.S. Windpower turbine has been operating in California's Altamount Pass since 1989.

STATISTICAL REVIEW

THIRD QUARTER SALES UP 3.8 PERCENT

Moderate economic growth, relatively warmer weather, and an increase in the number of customers led to a 3.8 percent increase in electricity sales to ultimate customers by investor-owned electric utilities during the third quarter of 1990 compared to the same quarter of 1989. Sales totaled 566.4 million megawatthours for the third quarter of 1990 and 545.6 million megawatthours for the third quarter of 1989. (See Table 1.)

The sales increase contributed to a third quarter revenue increase of 5.5 percent over the third quarter of 1989. Total revenues for the most recent third quarter were $40.4 billion. For the previous third quarter they were $38.3 billion. Rate actions approved during the quarter also contributed to the increase.

On an annual basis, total sales and revenues showed moderate increases. Sales increased by 2.9 percent from 1,999.2 million megawatthours to 2,056.4 million megawatthours. Revenues increased 4.5 percent from $131.9 billion to $137.8 billion.

Economic growth during the period was moderate. The Federal Reserve Board's Index of Production, which measures industrial activity, increased a modest 2.1 percent, from 108.1 for third quarter 89 to 110.4 for third quarter 90. Gross National Product, in constant 1982 dollars and seasonally adjusted at annual rates, increased only 1.1 percent from $4,129.7 billion at the end of the third quarter of 89 to $4,173.1 billion at the end of third quarter 90.

Table 1
Third Quarter Customer, Sales, and Revenue Data for Investor-Owned Electric Utilities

	Three Months Ending September 30,			Twelve Months Ending September 30,		
	1990	1989	% Change	1990	1989	% Change
Number of Customers						
Residential	73,696,554	72,647,835	1.4	73,379,320	72,279,774	1.5
Commercial	9,283,195	9,131,965	1.7	9,220,924	9,039,358	2.0
Industrial	405,986	387,545	4.8	386,938	375,610	3.0
Street & Highway	141,315	134,446	5.1	139,877	132,510	5.6
Other Public Authorities	157,883	154,196	2.4	155,904	153,896	1.3
Railroads	23	22	4.5	23	22	4.5
Interdepartmental	468	464	0.9	475	463	2.6
Total Customers	83,685,424	82,456,473	1.5	83,283,461	81,981,633	1.6
Electricity Sales (MWh)						
Residential	191,473,296	181,940,406	5.2	669,213,311	649,039,771	3.1
Commercial	171,704,699	164,699,089	4.3	606,705,808	586,180,769	3.5
Industrial	186,972,068	182,420,172	2.5	714,285,809	702,466,971	1.7
Street & Highway	2,451,068	2,483,295	(1.3)	10,490,713	10,398,030	0.9
Other Public Authorities	12,896,155	12,817,694	0.6	51,529,009	46,554,733	10.7
Railroads	617,449	625,179	(1.2)	2,505,518	2,421,924	3.5
Interdepartmental	284,041	569,477	(50.1)	1,634,747	2,135,438	(23.4)
Total Sales	566,398,776	545,555,312	3.8	2,056,364,915	1,999,197,636	2.9
Revenues ($000)						
Residential	16,421,662	15,352,938	7.0	54,017,128	51,447,736	5.0
Commercial	13,190,433	12,527,899	5.3	44,888,246	42,722,998	5.1
Industrial	9,725,144	9,367,866	3.8	34,829,237	33,768,624	3.1
Street & Highway	304,505	304,276	0.1	1,226,303	1,199,803	2.2
Other Public Authorities	692,411	673,742	2.8	2,540,742	2,438,405	4.2
Railroads	44,257	42,552	4.0	163,751	153,729	6.5
Interdepartmental	26,302	33,762	(22.1)	96,498	125,793	(23.3)
Total Revenues	40,404,673	38,303,035	5.5	137,761,905	131,857,088	4.5

Source: Edison Electric Institute, Statistics Department.

Weather for the period, although not tremendously warmer than average, was much hotter than it was during the third quarter of 1989. As measured by the National Oceanic and Atmospheric Administration, the number of cooling degree days was 3.7 percent greater than the historic norm for the period, but relative to third quarter 1989, the number of cooling degree days jumped 8.9 percent. For the twelve-month period ending September 1990, cooling degree days were 7.0 above and heating degree days were 3.3 percent below their 1989 levels.

Each of the three major customer classes recorded significant sales gains compared to the previous third quarter. Residential sales, influenced by the relatively warmer weather, grew 5.2 percent. Commercial sales, influenced by the weather, economic conditions, and a 1.7 percent increase in the number of ultimate customers, posted a 4.3 gain. Industrial sales, which generally track economic conditions, increased by 2.5 percent despite the economy's lackluster third quarter performance. The data appear to suggest that the increase may be partly attributable to third quarter growth in the number of customers in the industrial

percent. The difference is due to one major utility's reclassification of approximately 10,000 agricultural customers from the commercial to the industrial class. Electricity sales for the two classes were not significantly affected by the reclassification because of the relatively low demand per customer involved.

The total number of ultimate customers increased 1.5 percent for the third quarter of 1990 compared to the third quarter of 1989. On an annual basis the increase was 1.6 percent. Historically the increase in ultimate customers has averaged about 2.0 percent annually. Since the third quarter of 1988, however, the annual rate of increase declined steadily, reaching a low-point of 1.5 percent at year-end 1989. Since then, the rolling twelve-month average appears to have leveled off between 1.6 and 1.7 percent.

The number of total ultimate customers is determined in great part by the number of residential customers, who account for approximately 88 percent of all ultimate customers. With a third quarter 1990 increase of only 1.4 percent, the fourth quarter data will bear watching. According to the Census Bureau, the number of total households grew by 27.4 percent from 1970 to 1980 and by 14.9 percent from 1980 through 1989. The Bureau projects growth rates ranging from 9.8 to 15.7 percent from1990-2000. EP

Contributed by Edison Electric Institute's Finance and Accounting Department.

REGULATORY REVIEW

WSPP SEEKS PERMANENT STATUS

In January, members of the Western Systems Power Pool applied to the Federal Energy Regulatory Commission for authorization to continue the pool on a permanent basis.

FERC first approved WSPP's innovative and flexible marketing arrangement four years ago, but only on an experimental basis. (See this column in the May-June 1989 issue for background and an interim report on the experiment.) In the current proposal, the term of the WSPP agreement is set at ten years, thereafter continuing on a year-to-year basis. Members may withdraw with 30 days' notice, although some contractual obligations may remain.

The central tradeoff proposed by applicant Pacific Gas & Electric Company on behalf of WSPP is that members will pledge to provide each other with firm, long-term transmission access at cost-based rates if FERC will approve continued short-term (less than one year) sales of power and transmission service at non-cost-based rates among members.

WSPP now comprises 40 utilities (21 investor-owned and 19 government-directed) serving 20 million customers in 22 states and British Columbia. WSPP does not offer centralized dispatch. Its key features are flexible short-term pricing and an electronic bulletin board for prices bid and asked. Actual transactions are negotiated directly between members under price caps approved by FERC.

Price ceilings established by FERC in the earlier experiment for short-term power sales, transmission, and exchanges remain unchanged in this application.

In approving the WSPP experiment, FERC had earlier required that independent studies be undertaken to address potential improvements in economic efficiency, monopoly pricing by participants, identifiers of market power, and related issues. After several years of data collection, consultant Strategic Decisions Group found that the "results [of the experiment] have certain implications for regulation. As long as the competitive model is the chosen vehicle for enhancing economic efficiency, price flexibility in short-term markets should be maintained: these markets are more efficient without restrictive upper bounds on prices than with them."

At the same time, after finding that the experiment did not remove all of the impediments to competition, especially regarding transmission, the consultant concluded that a "permanent WSPP would not be a sufficient substitute for long-term [transmission] access to ensure investment efficiency. Nor would long-term access be a sufficient substitute for a permanent WSPP to ensure transaction efficiency, especially in short-term markets.

ELECTRIC PERSPECTIVES
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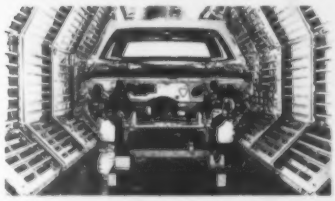

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Cover photo courtesy of GE Meter and Control Business. See page 20.

Earning Customer Satisfaction In a Greener America

Consumers' new environmental needs, wants, and preferences present utilities with new opportunities to satisfy their customers.

Delivering customer satisfaction is the goal of any business. Although most utility managers would accept this statement, many still commit the error of thinking that customer satisfaction is a static concept defined in terms of the utility's various product and operational performance levels. Marketing experts call organizations that think in these terms "production driven." What's important is what's important to them, not what's important to the ultimate customer.

"Consumer-driven" organizations, on the other hand, understand and accept that customer satisfaction is a fluid concept defined in terms of customers' ever-changing self-perceived needs, wants, and preferences. What's important is what's important to customers—in their own eyes.

Thirty to forty years ago an electric utility may have been able to earn customer satisfaction merely by producing and delivering electricity to its customers. Today, however, that level of performance is simply not enough. Customer segmentation research conducted by Cambridge Reports/Research International for Edison Electric Institute (EEI) over the last 6 years has uncovered new expectations customers have for their utilities, in both product and service areas, and has thereby identified new ways utilities can earn customer satisfaction. To name but a few: improved power quality, targeted programs that help customers get more control over their energy usage and bills, and the delivery of higher quality service in everyday customer/company interactions.

In this two-part series, Gene Pokorny reviews the results and implications of a recently completed research study on electric utilities, the environment, and customer satisfaction. This second article focuses on the performance evaluations and expectations that customers have for their utilities' environmental activities. The first article, published in the March-April 1991 issue of EP, reviewed how Americans think about and evaluate environmental issues in general.

The lastest in this series of customer segmentation studies was prompted by the rising environmental consciousness sweeping America right now. Whether called "The Greening of America" or by some other phrase, fundamental changes have and are occurring in Americans' environmental values, beliefs, and opinions. New environmental needs, wants, and preferences exist that are driving consumers' evolving expectations for business performance in general and for electric utilities' performance in particular. All these changes clearly present utilities with new challenges. They also, however, present utilities with new opportunities for finding additional ways to earn customer satisfaction in the 1990s.

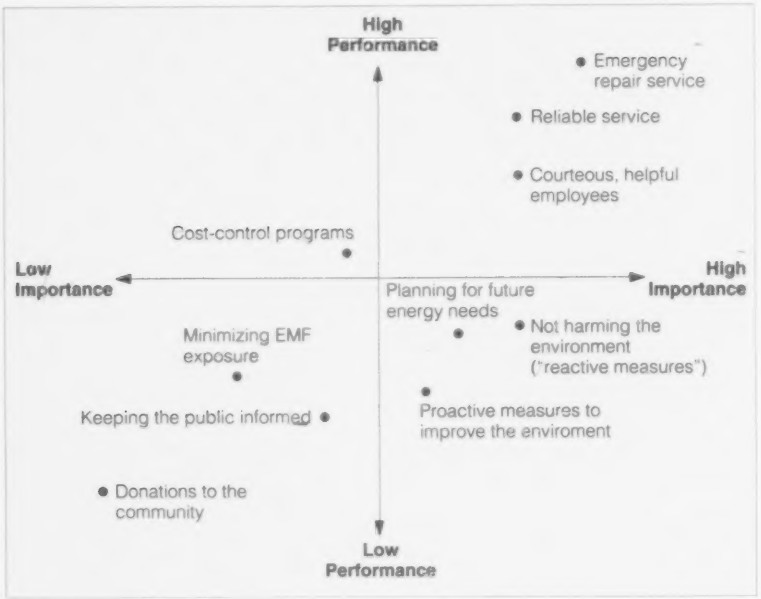
The *Electric Utilities and the Environment Study*, conducted in late 1990, was designed to explore how residential customers think about environmental issues and to provide insight into how electric utilities can use their environmental performance to enhance customer satisfaction. Interviews with 1,250 Americans selected to represent the adult U.S. population were conducted from September 4-17, 1990.

The study looked at how customers think about and evaluate environmental issues, many directly related to utility operations. (See *The Greening of America* in the previous issue.) In addition, the study uncovered how customers evaluate their own electric company's current environmental performance and identified which specific programs and activities can best demonstrate to varying customer segments an electric company's core commitment to environmental values and concerns. Those findings are highlighted here.

Gene Pokorny is Chairman of Cambridge Reports/Research International.

Figure 1

Mapping Customer's Expectations and Utilities' Performance



How Customers Evaluate Environmental Performance

In a set of questions in our national study, we asked customers to evaluate in two ways ten different areas of electric company performance. First, they rated the importance to themselves personally of the ten performance areas. Second, they rated their electric company's current performance in the same areas.

The ten areas included eight aspects of utility performance looked at in prior EEI residential customer studies—restoring service quickly in an emergency; offering programs and services to help consumers control their energy use and the size of their bills; planning carefully for future energy needs; providing reliable, high-quality electric service; keeping the public informed about the company and its policies; donating money/volunteers to help community organizations; making sure company activities and facilities do not harm the environment; and having employees who are understanding and courteous when customers have questions or problems. Two areas of utility performance not previously examined were also included—one, taking proactive steps to improve the environment and, two, minimizing the public's exposure to electric and magnetic fields associated with power lines).

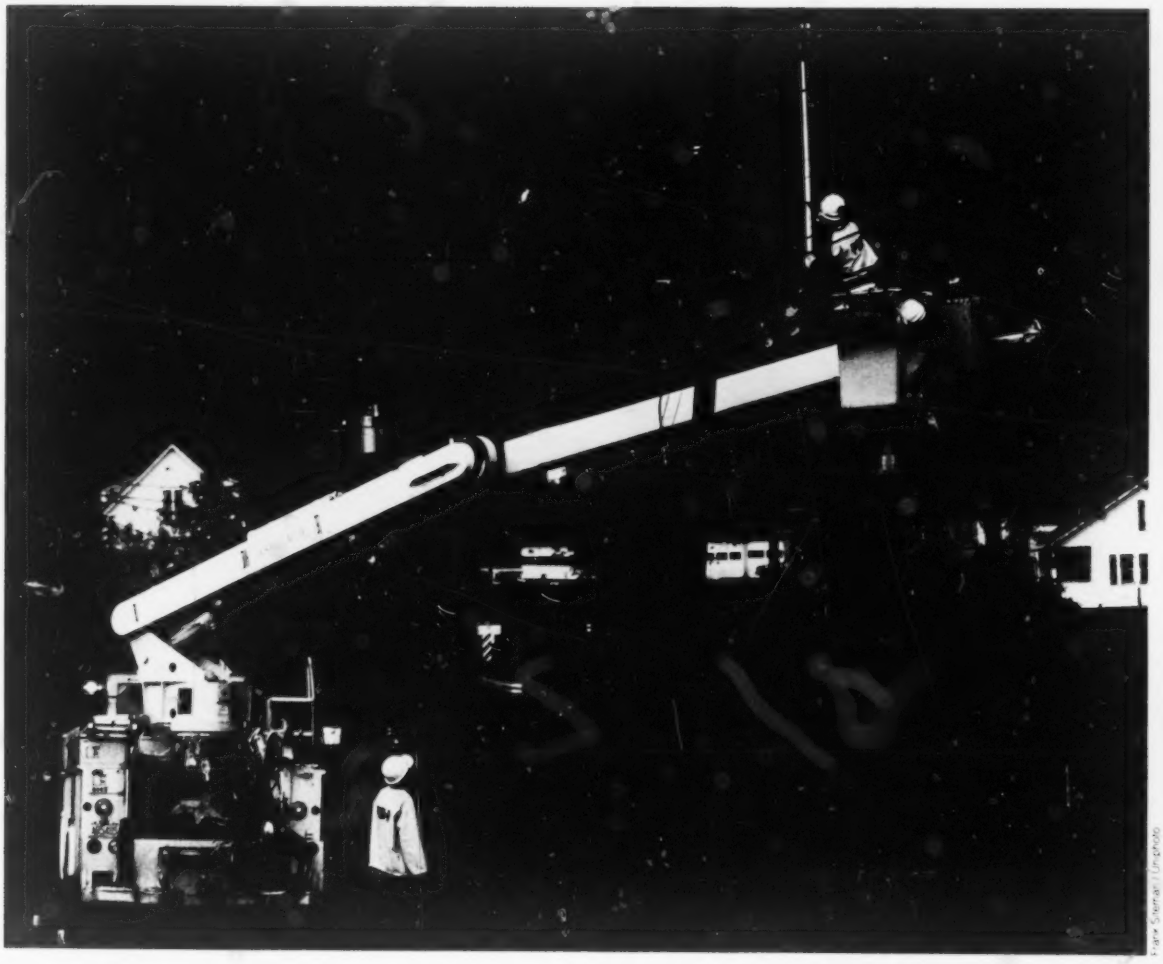
As we've seen in the earlier segmentation studies, customers see three traditional or core areas of utility performance to be most important—restoring service in emergencies; providing reliable, high-quality electric service; and having courteous employees who can help customers.

Right behind these three, however, also at high levels of importance, are three other performance areas—making sure company activities and facilities do not harm the environment (what we might call "reactive" environmental programs), careful planning for future energy needs, and taking proactive steps to improve the environment. (Interestingly, customers rated the specific EMF-related performance area we tested ninth in terms of importance, higher only than making donations to the community. This finding is congruent with other data discussed in the first part of this series that showed all residential customers currently see EMF issues as less serious than other potential environmental threats with which they are currently concerned.)

We then went on to examine customers' evaluations of current utility performance in these ten areas. By simultaneously plotting these performance evaluations against customers' importance ratings for the ten areas, we can create a perceptual map that shows where electric companies are exceeding, meeting, or failing to meet their customers' expectations. (See Figure 1.)

Performance areas shown in the upper right-hand quadrant of the map are those in which relatively high importance ratings are currently matched by relatively high performance ratings. As in previous studies, these areas are the three traditional core areas of utility performance—emergency repair service, reliable service, and courteous, helpful employees.

Conversely, areas of both relatively low importance and low performance are found in the lower left-hand quadrant of Figure 1. There we find donations to the community, minimizing EMF exposure, and keeping the public informed.



Hank Sherman/Unicorn

Of the ten aspects of performance they were asked about, customers consider the most important to be a utility's ability to restore service quickly in an emergency.

Of particular interest is the lower right-hand quadrant of the map. It contains areas rated relatively high in importance but low in terms of current performance. In this quadrant we find only three areas of activity—making sure company activities and facilities do not harm the environment, careful planning for future energy needs, and taking proactive steps to help the environment. In these areas of highest perceived underperformance, 12 to 15 percent of all customers cannot even rate their company's performance, suggesting that utility communications about these areas may be less widespread and or less successful than they are in the more traditional core areas of performance.

Another way of quantifying the extent of electric companies' underperformance in these ten areas of activity is to look at the number of residential customers who believe their company's current performance in a particular area is lower than the importance they ascribe to it. When we do this, we find 58 percent of customers think their electric company is underperforming in the area of reactive environmental activities; 55 percent see underperformance in proactive environmental activities; 53 percent see underperformance in planning for future energy needs. These three areas of activity are the only ones where majorities see current underperformance. Customers who are younger, have higher income and education, and are more politically active and "greener" than average are especially likely to perceive their utility to be underperforming in these areas.

In the specific area of minimizing the public's exposure to electric and magnetic fields, 44 percent of customers see underperformance. This relatively lower "underperformance segment" once again confirms our earlier findings, but also suggests that improved utility performance in the broader three areas of environmental energy planning may help utilities build the environmental cred-

Table 1

Programs Behind Four Environmental Activities Dimensions

Currently available technologies
Taking steps to reduce the strength of electric and magnetic fields from electric transmission lines
Designing electric household appliances to reduce the strength of their electric and magnetic fields
Informing the public about the strength of electric and magnetic fields from electric transmission lines near populated areas
Providing free information on environmental issues
Providing college scholarships for local students to study environmental sciences
Providing information about weatherization and other low-cost measures that can improve the energy efficiency of homes
Planting trees to help reduce carbon dioxide in the atmosphere
Protecting wildlife habitats from development
Developing electric "smart" houses that allow customers to monitor and automatically regulate their use of household appliances
Using electricity to replace other energy sources
Offering rebates or loans to help customers buy energy-efficient heating and cooling systems or other major appliances
Cutting vegetation away from transmission lines rather than using herbicides
Promoting building codes that require proper insulation and other energy-efficiency measures
New developing technologies
Using waste from coal-burning plants in concrete and other building materials, reducing the need to dispose of it in landfills
Developing clean coal technologies that will reduce emissions from coal-burning power plants
Reclaiming land from mining and other utility operations for agricultural, recreational, or other uses
Promoting use of energy-efficient lighting
Phasing out use of CFCs and other chemicals that can harm the ozone layer
Promoting electric heat pumps to replace less efficient heating and cooling systems
Developing safe ways to dispose of radioactive nuclear waste
Funding environmental research
Alternative energy/recycling
Helping to set up public recycling centers in the community
Developing cars and trucks that run on electricity
Developing alternative ways to generate electricity
Promoting the use of power plants that produce electricity by burning solid waste
Promoting the use of cogeneration, where steam used to make electricity is also used for heating or other applications
Recycling paper and other materials at its own facilities
Activities of specialized appeal
Importing electricity from Canada, rather than producing it in the United States
Allowing recreational use of utility-owned land under electric transmission lines
Directly controlling customers' major appliances to reduce demand for electricity at certain times
Developing a new generation of smaller, safer nuclear power plants
Allowing recreational use of utility-owned lakes and other properties

ibility and trust needed to deal more effectively with specific EMF issues as they gain greater customer attention in the years ahead.

After analyzing the underperformance gaps through the statistical technique of factor analysis, we found one final—and critical—insight from the responses customers gave to this series of questions. It is that customers tend to view utility performance in the three areas of highest individual underperformance—careful planning for future energy, reactive environmental actions, and proactive environmental actions—along a single underlying dimension. That is, how a customer views his or her utility in one of these areas of performance is strongly related to how he or she views it in the other two areas.

We call this underlying dimension *stewardship performance* since that phrase captures a common feature we see in these three performance areas: special obligations to serve the local community in return for having the electricity franchise. Customers appear to hold their electric company responsible for the local environment in two related senses. First, it must guarantee adequate supplies of reliable electricity to sustain the future economic health of the community. Second, it must take "reactive" steps to ensure that its efforts to produce and deliver this electricity do not harm the physical environment, while also taking "proactive" steps to protect and improve the environment for future generations.

What Environmental Programs and Activities Do Customers Want?

Customers were asked toward the end of our interview to rate the importance to them personally of 32 different things their electric company could do to protect and improve the environment. Programs and activities ranged from safely disposing of radioactive nuclear waste to planting trees to help reduce carbon dioxide buildup in the atmosphere, from promoting energy efficiency to setting up community recycling centers, and from funding environmental research to developing "smart" houses. Three EMF activities were also included—designing electric household appliances to reduce the strength of their electric and magnetic fields, taking steps to reduce the strength of electric and magnetic fields from electric transmission lines, and informing the public about the strength of electric and magnetic fields from electric transmission lines located near populated areas.

Again utilizing the statistical technique of factor analysis, we found that most of these programs and activities are strongly correlated with one of four underlying dimensions: currently available technologies, new developing technologies, alternative energy and recycling, and activities of specialized appeal. Table 1 (page 46) presents the key environmental programs and activities that make up these dimensions or groupings.

Of particular importance is how customers group the three EMF-related activities together with other currently available technologies and activities that utilities could use to help the environment. This grouping suggests that if utilities do not meet customer expectations in this area, customers will interpret that underperformance more as a lack of will than as a lack of the development of new knowledge and technologies. Whether rightly or wrongly, customers believe things can be done now to reduce EMF exposure.

In this situation, perceptions could increase that utilities are not doing their job of managing the effects of exposure to EMF—when they could be, in customers' eyes, if they really wanted to. If allowed to rise, these perceptions in turn may lead to fundamental consumer questioning of their utility's basic core and value commitment not only to the environment but also to their personal health and safety.

On each of the four environmental program and activities dimensions, we divided customers into groups, or segments, based on their answers. Table 2 presents these segments on each dimension. The dramatic conclusion that leaps out of this segmentation array is the overwhelming numbers of residential

Table 2

Customer Segments Based on Importance Ratings of Four Environmental Activities Dimensions

	Customer segments (%)		
	Low Importance	Moderate Importance	High Importance
Currently available technologies	3.3	11.3	85.5
New developing technologies	2.5	6.5	91.0
Alternative energy/recycling	4.2	8.9	86.9
Activities of specialized appeal	27.8	29.0	43.2

Roger Foley / Folio, Inc.

The survey results indicate that, rightly or wrongly, customers believe electric utilities can do things now to reduce EMF exposure.

customers who want their electric company to undertake more environmental actions, virtually across the board. Eighty-five to ninety-one percent say it is highly important to them personally that programs be done in the currently available technologies area, the new developing technologies area, and the alternative energy/recycling area.

Based on our experience in doing environmental studies for a range of companies in different sectors of the economy, we strongly believe that these high environmental performance expectations are unique to utilities. In our view, these expectations flow from and are part of the special role electric companies play in the communities they serve. In return for the privilege of operating with publically granted monopoly status, customers seem to want their electric company to fulfill significant social and community obligations.

Customers want their electric company to safeguard the future economic environment by providing adequate energy supplies, but at the same time they want it to protect the physical environment by appropriate means. In a sense, customers want their electric company to be stewards of their own and their community's values, now and into the future. Unlike a local manufacturing plant or a subsidiary of a big multinational corporation, the local utility can't just pull up stakes and set up shop somewhere else, leaving its environmental problems behind. Just as customers perceive they have their roots in their community, so too—by choice and necessity—does their electric company. That clearly means something special to customers. They place special obligations on their electric company—stewardship of their community and its values, including its environmental values.

While different demographic groups of the overall residential customer base prefer one particular environmental program slightly more than another, majorities of virtually every group consider most of the environmental activities we looked at to be highly important. And, in this instance, the differences between greens and other customers are very small. Among the programs and activities tested, those that rate the highest individually in overall importance include developing safe ways to dispose of nuclear waste, planting trees to reduce carbon dioxide, developing alternative ways to generate electricity, phasing out ozone-depleting chemicals like CFCs, promoting energy efficiency measures, and recycling activities, both in the workplace and in the broader community.

Responding to the Environmental "Call to Action"

The Greening of America is a reality. Environmental protection, increasingly seen as environmental self-protection, has emerged as a core value in American society. Electric compa-

nies must accept this new reality as a "fact of life."

To be successful in this climate of opinion, utilities should position themselves as companies that are becoming increasingly more environmentally responsible. This task can be accomplished by developing what could be called an "environmentally responsible energy provider story." Such a story can serve as the essential foundation for a utility's programs and activities developed to enhance the company's environmental performance, credibility, and image.

Communications is, of course, a key part of this. Just talking better and wiser about current company energy products and practices can go a long way toward improving customer perceptions about a company's environmental performance. If an electric company's products, end-use applications, and operations are environmentally responsible, the utility should talk about them in terms of these "environmental benefits"; they should repackage them as part of an environmental success story. The marketing of energy efficient technologies, be they heat pumps or smart houses, is a clear case in which environmental benefits that can legitimately be attributed to these technologies will not only help sell them to individual customers but also help improve customer perceptions of the company's commitment to the environment.

In addition, the "environmentally responsible energy provider story" must also be based on new programs and activities that better demonstrate the reality of the company's commitment to developing energy products and applications and to operating in ways that meet changing consumer environmental demands in the marketplace. Communications should magnify and amplify this story as it develops and unfolds at the operational level inside a company.

Three building blocks are essential to creating an environmentally responsible energy provider story:

- The electric company must identify with environmental quality and preservation as a core American value.
- Electricity and its end-use applica-

All of us at Cambridge Reports/RI appreciate that you, through Edison Electric Institute, selected us to conduct the "Electric Utilities and the Environment Study."

Building on the findings of EEI's earlier customer segmentation research, this recent study is the basis of the articles "Earning Customer Satisfaction in a Greener America," in this issue of *Electric Perspectives*, and "The Greening of America," in the March-April 1991 issue.

If there is one thing we've learned in our 18 years of research experience—including more than 800 studies for over 100 utilities in areas like customer service evaluation, marketing, demand-side management, communications, and supply-side planning and forecasting—it is that customer attitudes and expectations are constantly changing.

Well-designed customer research like EEI's continues to be the surest route to understanding these changes, meeting the marketing challenges they present, and ultimately profiting from them.

We are proud and grateful to be part of this research effort.

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tions should increasingly be given environmentally positive product attributes or characteristics—that is, environmental benefits should become defining product characteristics of electricity and its usage.

- Superior environmental performance must be a developing and defining attribute of the electric company itself.

All three components must be present if customers are going to believe the environmentally responsible energy provider story and, as a result, accept and trust their electric utility.

The bottom line: individual companies and the industry as a whole must aggressively take actions that prove to customers that the phrase "more environmentally responsible energy" is an appropriate attribute of electricity and its end-use applications. And most importantly, the electric utility industry must convince its customers that it as an industry truly is committed to environmental values as core values of American society.

What do I mean by this latter point?

One of the persistent themes that emerges in consumer opinion studies in the environmental area is that Americans do not believe business is really and truly committed—as they perceive themselves to be—to the values of environmental protection, quality, and preservation. As a result of this value discontinuity, there is widespread skepticism about business motives and an unwillingness to give business full credit for what it does do to help the environment. This skepticism is pervasive. We see it, for example, in the explanation people offer for why the oil industry is developing reformulated gasoline ("they're doing it to kill off better, nonpolluting alternative fuels") or why the electric utility industry spends significant resources to improve the emissions performance of its plants ("because the government demands it").

If this value discontinuity persists, it will continually work to undercut the industry's good works in the environmental area. Utilities must, therefore, find ways to "give witness" to their basic commitment to core

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environmental values. Specific product and operational performance improvements will obviously help, but something more is needed—in the realm of style and symbolism—in the realm of those things that communicate our values in ways that go above and beyond our specific behaviors.

Emphasizing the need to be attentive to these kinds of perceptions does not in any way argue for style over substance. The reality of the utility industry's environmental performance is absolutely essential to enhancing its credibility and image as being environmentally responsible. But something else must be done in addition or—to put that another way—as part of "performance." And that something else is unfortunately quite intangible. It's communicating in the broadest sense of that word that electric companies really care about the environment. That utilities are doing whatever they're doing in this area not because they have to or because it's good business, but because they want to, because it's right.

And in this realm of communicating their values, electric companies should never forget that the "little things" they do are often as important as the "big things." As the our research showed, recycling the electric company's paper and helping communities recycle their wastes score as high with customers as finding new ways to generate electricity more cleanly. Informing people candidly and honestly about the strength of electric and magnetic fields scores as high as taking more elaborate and expensive steps to reduce the strength of fields around transmission lines and appliances.

Tim Ribar / Uniphoto

Residential customers think that developing safe ways to dispose of nuclear waste is one of the most important things utilities can do to safeguard the environment.

Electric utilities should communicate aggressively their individual environmentally responsible energy provider stories truthfully and honestly as a work-in-progress. Americans will understand and accept that kind of "story" because it matches the environmental and energy "stories" they themselves are living right now. It's true to their own experience. Their own judgments and attitudes are in flux as they try to bring their actions and purchase decisions in line with their energy and environmental values. Many are feeling guilty that they are not doing more. Some fringe environmentalists may think they have all the answers to environmental protection and a sustainable energy future, but most Americans know they do not—and they do not expect the utility industry to either.

What Americans do expect is that the electric utility industry will make the same commitment they perceive they themselves have made to a safer environment and a better energy future. Americans will even tolerate mistakes if they believe that core commitment has been made. The challenge for utilities is to engage the public in a partnership—a win/win game—where people feel they are working with their utility to do a better job today and in the future than has been done in the past to protect the environment.

This then ultimately is the challenge and the opportunity presented by the Greening of America. Utilities should make superior environmental performance a competitive advantage for electricity in general and a competitive advantage for their own individual companies in particular. They should make their superior environmental performance yet another means by which they truly market customer satisfaction in the 1990s.

Editor's Note: To purchase the full report on this research, *Electric Utilities and the Environment: Performance and Expectations for the 1990s*, contact Edison Electric Institute's Order & Billing Department at 701 Pennsylvania Avenue, N.W., Washington, DC, or call (202) 508-5425 or -5424. Refer to EEI publication number 07-91-18.

FINANCIAL REVIEW

FOURTH QUARTER EARNINGS PER SHARE DOWN 30 PERCENT

Investor-owned electric utility earnings per share before extraordinary items and the cumulative effect of a change in accounting principal declined 30 percent from $0.30 in the fourth quarter of 1989 to $0.21 in the fourth quarter of 1990. (See Table 1.) The drop is due primarily to writeoffs coupled with lower accruals.

After-tax writeoffs for the fourth quarter were $1.5 billion in 1990 compared to $1.3 billion for the same quarter the previous year. If these writeoffs were excluded from the calculation, earnings per share would have doubled over the previous year's fourth quarter, jumping from $0.21 to $0.42.

Total electric operating revenues increased 4.1 percent from $33.8 billion in the fourth quarter of 1989 to $35.2 billion in the fourth quarter of 1990. Total electric operating expenses increased 4.0 percent on a quarter-to-quarter basis. Purchased power & net interchange increased by 29.1 percent from $2.3 billion to $3.0 billion. The $675 million increase was caused largely by some companies' need to purchase power during plant outages and increased power purchases from both utility and nonutility sources.

At the same time, fuel expense declined by 4.9 percent from the fourth quarter of 1989 to the same quarter of 1990, dropping by $382 million from almost $7.9 billion to under $7.5 billion. Several utilities displaced fossil fuel with nuclear fuel for new plants that came on line in 1990.

The 4.1 percent increase in electric operating revenues combined with the 4.0 percent increase in electric operating expenses to yield a 4.6 percent increase in electric operating income.

Other interest expenses & charges increased by 45.6 percent from $309 million in the fourth quarter of 1989 to $450 million in the fourth quarter of 1990. The significant increase was caused primarily by the actions of two

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Table 1
Investor-Owned Electric Utility Industry Statement of Income
(Millions of Dollars)

	Three Months Ending December 31,			Twelve Months Ending December 31,		
	1990	1989r	% Change[3]	1990	1989r	% Change[3]
Total Electric Operating Revenue[1]	$35,219	$33,828	4.1	$146,532	$140,875	4.0
Electric Operating Expenses						
Fuel	$7,472	$7,854	(4.9)	$31,723	$31,701	0.1
Purchased Power & Net Interchange	2,997	2,322	29.1	10,852	8,870	22.3
Other Operation & Maintenance	10,589	9,906	6.9	39,258	36,828	6.6
Depreciation & Amortization	3,785	3,732	1.4	15,373	15,111	1.7
Costs Deferred Under Rate Phase-In	(97)	(117)	(17.3)	(547)	(701)	(21.9)
Taxes Other Than Income Taxes	2,777	2,562	8.4	11,504	10,814	6.4
Income Taxes: Federal & Other	1,263	1,110	13.8	7,064	6,916	2.1
Deferred Income Taxes	173	445	(61.1)	1,808	2,247	(19.6)
Investment Tax Credits, Net	(73)	(39)	85.6	(91)	(194)	(53.3)
Total Electric Operating Expenses	$28,888	$27,775	4.0	$116,943	$111,592	4.8
Electric Operating Income	$6,331	$6,053	4.6	$29,588	$29,283	1.0
Other Utility Operating Income	295	332	(11.3)	1,124	1,245	(9.7)
Total Utility Operating Income	$6,625	$6,385	3.8	$30,713	$30,528	0.6
Other Income & Deductions, Net	$(916)	$(544)	68.4	$(1,026)	$(804)	27.6
Phase-In Deferrals	196	250	(21.7)	743	1,057	(29.7)
Allowance for Other Funds Used During Construction	207	307	(32.7)	1,039	1,160	(10.4)
Total Income Before Interest Charges	$6,112	$6,399	(4.5)	$31,469	$31,941	(1.5)
Interest Charges						
Interest on Long-Term Debt	$3,830	$3,708	3.3	$15,445	$15,130	2.1
Other Interest Expenses & Charges	450	309	45.6	1,533	1,267	21.0
Allowance for Borrowed Funds Used During Construction	(180)	(284)	(36.5)	(929)	(1,262)	(26.4)
Net Interest Expenses & Charges	$4,100	$3,734	9.8	$16,049	$15,135	6.0
Net Income Before Extraordinary Items	$2,012	$2,665	(24.5)	$15,420	$16,806	(8.2)
Extraordinary Items	0	(22)	N.M.	(36)	(118)	(69.7)
Cumulative Effect of a Change in Accounting Principle	(1)	(2)	(66.3)	15	(159)	N.M.
Net Income	$2,011	$2,641	(23.9)	$15,399	$16,528	(6.8)
Preferred Dividends Declared	490	508	(3.5)	2,021	2,107	(4.0)
Net Income Available for Common	$1,521	$2,133	(28.7)	$13,378	$14,422	(7.2)
Common Dividends Declared	3,261	3,200	1.9	12,696	12,346	2.8
Additions to Retained Earnings	$(1,740)	$(1,067)	63.1	$682	$2,076	(67.1)
Average Shares Outstanding (Millions)	7,125	7,077	0.7	7,134	7,041	1.3
Earnings Per Share Before Extraordinary Items and the Cumulative Effect of a Change in Accounting Principle[2]	$0.21	$0.30	(30.0)	$1.88	$2.09	(10.0)
Earnings Per Share After Extraordinary Items and the Cumulative Effect of a Change in Accounting Principle[2]	$0.21	$0.30	(30.0)	$1.88	$2.05	(8.3)
Common Dividends Per Share[2]	$0.46	$0.45	2.2	$1.78	$1.75	1.7

Source: Edison Electric Institute Survey Data and Standard & Poor's Compustat II Database Service.

[1] Revenues are adjusted for intra-industry electricity sales for resale.
[2] Based on average shares outstanding as reported to Edison Electric Institute by survey respondents and adjusted for stock splits.
[3] Percent changes may reflect independent roundings.
r=revised to reflect company restatements.
N.M.=Not Meaningful.

Table 2
Investor-Owned Electric Utility Industry Balance Sheet
(Millions of Dollars)

Assets	December 31, 1990	December 31 1989r	% Change[2]
Utility Plant[1]			
Utility Plant (Including Nuclear Fuel)	$517,119	$485,050	6.6
Less Accumulated Depreciation	157,557	144,475	9.1
Total	$359,561	$340,574	5.6
Construction Work in Progress	24,884	36,919	(32.6)
Net Utility Plant	$384,446	$377,494	1.8
Investments	28,107	25,939	8.4
Current Assets	44,624	42,990	3.8
Deferred Debits	36,694	34,461	6.5
Total Assets	$493,871	$480,885	2.7
Capitalization & Liabilities			
Capitalization			
Common Stock	$94,556	$94,152	0.4
Retained Earnings	53,890	53,123	1.4
Preferred Stock	25,611	25,900	(1.1)
Long-Term Debt	172,822	169,740	1.8
Total Capitalization	$346,878	$342,916	1.2
Current Liabilities			
Short-Term Debt	$11,091	$9,560	16.0
Long-Term Debt Due Currently	8,880	6,782	30.9
Other Current Liabilities	35,951	34,915	3.0
Total Current Liabilities	$55,922	$51,257	9.1
Deferred Credits			
Capital Lease Obligations, Non-Current Portion	$4,428	$4,636	(4.5)
Accumulated Deferred Income Taxes	51,473	49,435	4.1
Accumulated Deferred Investment Tax Credits	15,642	15,989	(2.2)
Other Deferred Credits	19,529	16,652	17.3
Total Deferred Credits	$91,072	$86,711	5.0
Total Capitalization & Liabilities	$493,871	$480,885	2.7

Source: Edison Electric Institute Survey Data and Standard & Poor's Compustat II Database Service.

[1]Includes non-electric utility plant.
[2]Percent changes may reflect independent roundings.
r-revised to reflect company restatements.

companies. One decided to pay all interest charges on unsettled disputes with the Internal Revenue Service to avoid higher potential interest charges at settlement. The other deferred more interest expense on a nuclear unit in 1989 than it did in 1990, making it appear that its interest expense had increased.

For the year ending December 31, 1990, earnings per share before extraordinary items and the cumulative effect of a change in accounting principal declined by 10.0 percent from $2.09 in 1989 to $1.88 in 1990. Higher operation & maintenance costs, higher writeoffs, and lower earnings accruals were responsible for the decline. During 1990 approximately $600 million in non-recurring reductions to operating revenues and increases to operating expenses were recorded.

Total utility plant increased 6.6 percent from $485.1 billion at the end of fourth quarter 89 to $517.1 billion a year later. (See Table 2.) A corresponding 32.6 percent decline in construction work in progress was also recorded for the period.

Tables 1 and 2 are based on unaudited reports submitted by a sample of investor-owned electric utilities. With the use of the Standard & Poor's Utility Compustat II database, data are adjusted to represent the entire investor-owned electric utility industry. The data have also been revised to reflect all company restatements.

Contributed by Edison Electric Institute's Finance and Accounting Department.

REGULATORY REVIEW

NARUC CALLS FOR LEGISLATION TO MODIFY ALLOCATION OF AUTHORITY OVER ELECTRIC UTILITIES

At its winter committee meetings held in Washington, DC, in late February, the National Association of Regulatory Utility Commissioners called unanimously for legislation to reallocate federal and state authority over utility regulation under the Federal Power Act.

The association resolved that the Act should be amended "to reform State and Federal jurisdiction over electric utility transactions to conform to the operational reality of the industry...." This reality, NARUC asserted, includes increased reliance on wholesale power suppliers (including nonutility generators), greater regional coordination of power supply planning and operations, mergers and consolidations of utility operations in multiple jurisdictions, and increased transmission access by third parties.

Pointing to two Supreme Court decisions, NARUC described in its resolution how state authority to regulate wholesale transactions has been whittled away since the passage of the Federal Power Act. In *Federal Power Commission v. Southern California Edison* [376 U.S. 205 (1964), the so-called Colton case], the court held that federal jurisdiction over wholesale transactions includes those that take place entirely within one state. And, in *Mississippi Power and*

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STATISTICAL REVIEW

FOURTH QUARTER SALES UP 0.4 PERCENT

Mild weather along with an increase in the number of commercial and industrial customers led to a modest 0.4 percent increase in fourth quarter 1990 sales by investor-owned electric utilities. (See Table 1.)

The number of commercial customers grew by 1.4 percent compared to the previous year's fourth quarter while the number of industrial customers grew by 3.5 percent. Commercial sales were up 1.7 percent; industrial sales were up 1.2 percent.

Residential sales declined 1.2 percent compared to fourth quarter 1989 due to the milder weather experienced during the fourth quarter of 1990. The number of residential customers grew by 1.3 percent.

The 1.4 percent increase in total customers combined with the 0.4 percent increase in total sales to produce a 3.6 percent increase in revenues for the quarter. Among the three major customer classes, revenue growth was strongest in the commecial sector, which saw a 4.9 percent increase on a quarter-to-quarter basis. Revenues in the industrial class were up 3.5 percent, and revenues in the residential class were up 2.8 percent.

For the year ending December 31, 1990, the number of customers grew by 1.5 percent, sales grew by 1.9 percent, and revenues grew by 4.1 percent. Again, sales and revenue growth were strongest in the commercial class.

1989 FUEL STATISTICS

Electricity generation from all energy sources by the total electric utility industry grew by 2.8 percent in 1989, up from 2,704,250 million kilowatthours in 1988 to 2,780,775 million

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Table 1
Fourth Quarter Customer, Sales, and Revenue Data for Investor-Owned Electric Utilities

	Three Months Ending December 31,			Twelve Months Ending December 31,		
	1990	1989	% Change	1990	1989	% Change
Number of Customers						
Residential	73,980,335	73,009,113	1.3	73,650,920	72,568,088	1.5
Commercial	9,294,735	9,168,523	1.4	9,257,335	9,088,220	1.9
Industrial	393,115	379,680	3.5	392,217	378,189	3.7
Street & Highway	141,874	137,129	3.5	141,177	133,940	5.4
Other Public Authorities	159,219	155,624	2.3	156,829	154,852	1.3
Railroads	23	22	4.5	23	22	4.5
Interdepartmental	464	462	0.4	475	462	2.8
Total Customers	83,969,765	82,850,553	1.4	83,598,976	82,323,773	1.5
Electricity Sales (MWh)						
Residential	156,390,404	158,345,069	(1.2)	667,308,731	657,376,858	1.5
Commercial	147,098,881	144,652,683	1.7	609,262,480	592,716,392	2.8
Industrial	178,799,611	176,747,292	1.2	716,853,435	706,901,026	1.4
Street & Highway	2,812,437	2,806,683	0.2	10,507,431	10,430,712	0.7
Other Public Authorities	12,371,306	12,888,104	(4.0)	51,001,490	48,414,306	5.3
Railroads	629,541	650,804	(3.3)	2,487,072	2,473,787	0.5
Interdepartmental	308,694	386,457	(20.1)	1,453,680	1,911,017	(23.9)
Total Sales	498,410,874	496,477,092	0.4	2,058,874,319	2,020,224,098	1.9
Revenues ($000)						
Residential	12,679,904	12,332,297	2.8	54,423,802	52,199,755	4.3
Commercial	11,044,088	10,532,964	4.9	45,426,671	43,382,561	4.7
Industrial	8,712,421	8,416,955	3.5	35,203,761	34,120,006	3.2
Street & Highway	316,140	306,430	3.2	1,236,945	1,210,30[illegible]	2.2
Other Public Authorities	636,435	628,447	1.3	2,547,972	2,498,112	2.0
Railroads	40,721	41,774	(2.5)	162,641	158,297	2.7
Interdepartmental	22,576	15,876	42.2	103,758	108,402	(4.3)
Total Revenues	33,452,287	32,274,742	3.6	139,105,550	133,677,529	4.1

Table 2
1989 Total Electric Utility Industry Fuel Statistics

	1989	1988	% Change
Net Generation (millions of kilowatthours)			
Coal	1,528,087	1,518,416	0.6
Oil	152,892	144,278	6.0
Gas	257,833	247,789	4.1
Nuclear	527,632	524,603	0.6
Cost/Million Btu Consumed (cents)			
Coal	150.3	152.2	(1.2)
Oil	293.7	260.5	12.7
Gas	238.4	227.7	4.7
Nuclear	68.5	72.6	(5.7)

Source: Edison Electric Institute, Statistics Department

kilowatthours. Generation from fossil fuels increased by 1.5 percent while generation from nuclear fuel increased by only 0.6 percent. (See Table 2.)

Coal accounted for 54.95 percent of the generation; nuclear, 18.97 percent; gas, 9.27 percent; oil, 5.50 percent; and hydro and other sources, 11.30 percent. [According to the latest DOE/EIA data (published in *Monthly Power Plant Report*), net generation by the total electric utility industry grew only 0.8 percent in 1990, with coal accounting for 55.5 percent of the total; nuclear, 20.6 percent; gas, 9.4 percent; oil, 4.2 percent; and hydro and other sources, 10.4 percent.]

The composite average cost per million Btu of fossil fuels consumed by the electric utility industry in 1989 was 174.0 cents, a 1.9 percent increase over the 170.7 cents recorded for 1988. On the same average-cost-per-Btu basis, coal and nuclear fuel costs dropped (1.2 and 5.7 percent, respectively) while oil and gas costs increased (12.7 and 4.7 percent,respectively).

Data for this report were taken from the latest edition of *Statistics on Fuel Used to Generate Electricity by the Electric Utility Industry*, a report published annually by Edison Electric Institute. The full report contains data by census division on the consumption of fossil and nuclear fuels, the generation of electricity from those fuels, and costs and other information associated with those fuels.

Contributed by Edison Electric Institute's Statistics Department.

TECHNOLOGY REVIEW

NEW CENTER PROMOTES TECHNOLOGY TRANSFER

The Electric Power Research Institute's Customer Systems Division is establishing a new customer support center to help member utilities apply the division's technology and knowledge to solve problems. The Customer Assistance Center will offer a range of services—including seminars and workshops, assistance in customizing EPRI-developed products, and "jump-start" consulting designed to help utilities launch their own studies and projects.

The new center reflects an Institute-wide effort to place more emphasis on technology transfer, according to EPRI's Larry Lewis, manager of the center. "In developing a product," he says, "you're not really finished until you've put that product into the hands of end users, then trained them to use it to solve problems." The center, he says, was established to provide quick access to EPRI products and reduce the time needed to learn how to use them.

According to Lewis, the center aims to fill a niche in the marketplace that has been vacant up to now—rapid response to short-term utility problems. "Many utilities often encounter problems whose solution may require only a day or a few days of a contractor's time," he says. "But contractors aren't always available to work on short-term projects on short notice.

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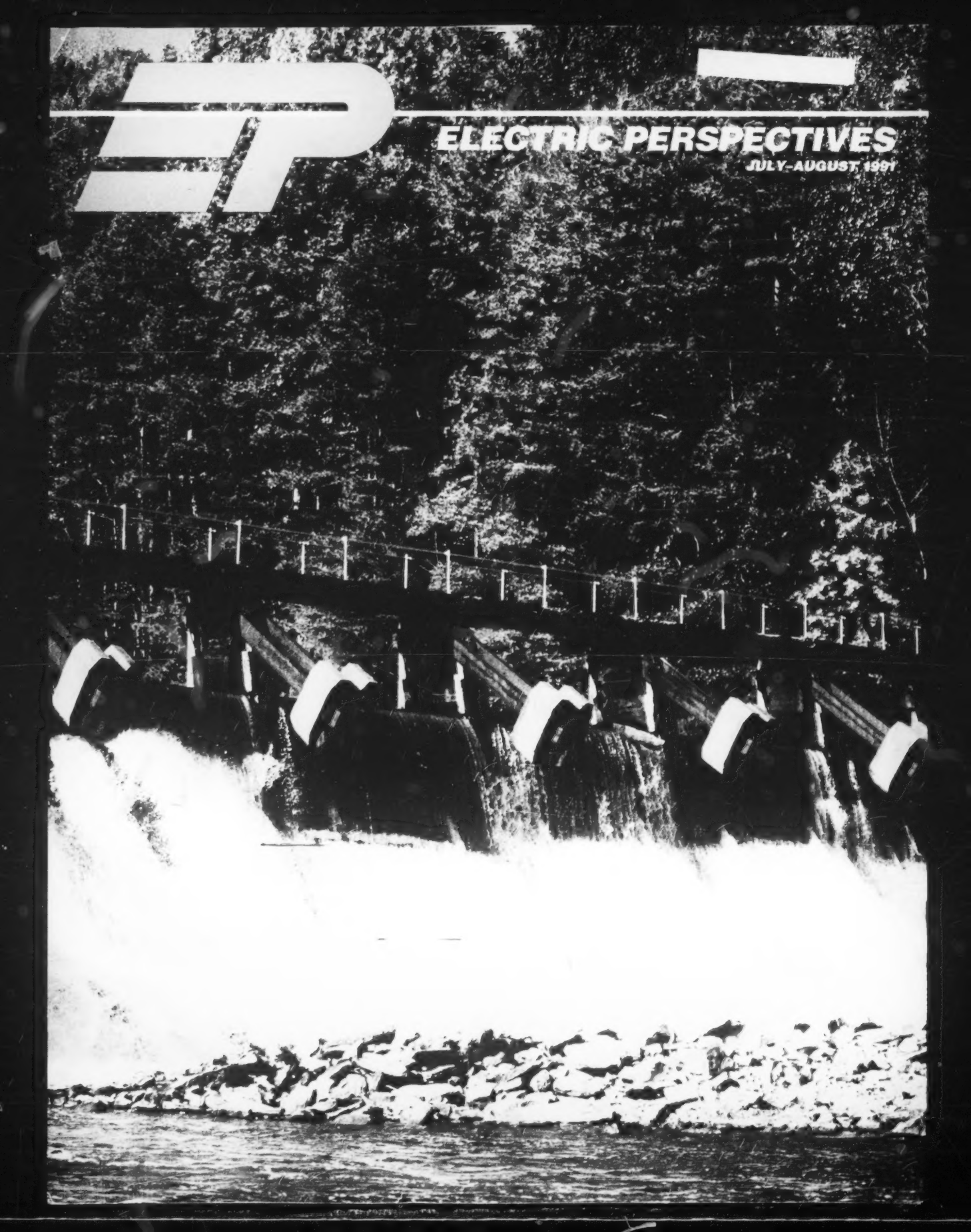
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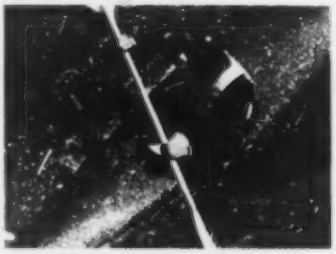

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Prompted in part by the relicensing glut of 1993, both utilities and regulators are struggling harder than ever to find the proper balance between safe, efficient hydroelectric generation and historic preservation.

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Some utilities have discovered a new, virtually cost-free way to improve their performance and change their organizational culture.

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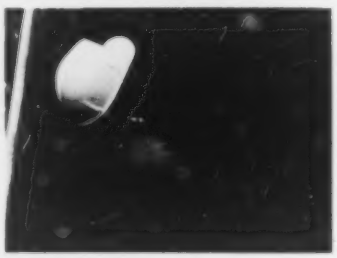

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Cover photo of the Halifax Hydropower Project courtesy of Synergics, Inc.

FINANCIAL REVIEW

FIRST QUARTER EARNINGS PER SHARE DOWN 6.8 PERCENT

Investor-owned electric utility earnings per share before extraordinary items and the cumulative effect of a change in accounting principal declined 6.8 percent from $0.74 in the first quarter of 1990 to $0.69 in the first quarter of 1991. (See Table 1.) As in recent periods, the decline was caused primarily by nonrecurring items that reduced income, a continued reduction in allowance for funds used during construction and phase-in plan accruals, and slow economic growth.

Nonrecurring items for the first quarter of the year amounted to approximately $430 million, higher than they were during the same period in 1990 but substantially lower than the $800 million they have averaged for each of the last eight quarters. On an annual basis, nonrecurring items for the period ending March 31, 1991, totaled approximately $3.9 billion, up significantly from the $2.8 billion recorded for the previous twelve months.

The restated recognition of unbilled revenues by various companies during the first quarter of last year also contributed to the relative decline in earnings per share for the first quarter of this year. For the quarter ending March 31, 1990, unbilled revenue increased net income by $296 million, as reflected in the cumulative effect of a change in accounting principle shown in Table 1. No unbilled revenue was so recognized in 1991.

Total electric operating revenues increased 4.2 percent from $34.9 billion in the first quarter of 1990 to $36.4 billion in the first quarter of 1991. The revenue increase was due largely to rate relief granted to several companies since the first quarter of last year. In addition, some utilities experienced more severe weather this year than last, which also led to stronger sales.

Total electric operating expenses increased from $26.7 billion in the first quarter of 1990 to $27.9 billion in the first quarter of 1991. The 4.6 percent increase is

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Table 1
Investor-Owned Electric Utility Industry Statement of Income
(Millions of Dollars)

	Three Months Ending March 31,			Twelve Months Ending March 31,		
	1991	1990r	% Change[3]	1991	1990r	% Change[3]
Total Electric Operating Revenue[1]	$36,396	$34,934	4.2	$148,640	$142,523	4.3
Electric Operating Expenses						
Fuel	$7,586	$7,769	(2.4)	$31,626	$31,700	(0.2)
Purchased Power & Net Interchange	2,863	2,429	17.9	11,619	9,491	22.4
Other Operation & Maintenance	8,431	8,078	4.4	38,486	36,309	6.0
Depreciation & Amortization	4,128	3,843	7.4	15,688	15,239	2.9
Costs Deferred Under Rate Phase-In	(90)	(262)	(65.7)	(454)	(751)	(39.6)
Taxes Other Than Income Taxes	3,040	2,880	5.6	11,683	10,980	6.4
Income Taxes: Federal & Other	1,393	1,557	(10.5)	6,938	7,046	(1.5)
Deferred Income Taxes	666	428	55.5	2,017	2,024	(0.4)
Investment Tax Credits, Net	(30)	27	N.M.	(149)	(141)	6.0
Total Electric Operating Expenses	$27,987	$26,748	4.6	$117,454	$111,900	5.0
Electric Operating Income	$8,409	$8,185	2.7	$31,186	$30,624	1.8
Other Utility Operating Income	670	580	15.4	1,150	1,118	2.9
Total Utility Operating Income	$9,079	$8,766	3.6	$32,337	$31,742	1.9
Other Income & Deductions, Net	$124	$188	(34.3)	($1,096)	($645)	69.9
Phase-In Deferrals	109	313	(65.4)	639	1,083	(41.0)
Allowance for Other Funds Used During Construction	208	332	(37.3)	961	1,203	(20.1)
Total Income Before Interest Charges	$9,519	$9,599	(0.8)	$32,840	$33,383	(1.6)
Interest Charges						
Interest on Long-Term Debt	$3,825	$3,761	1.7	$15,492	$15,162	2.2
Other Interest Expenses & Charges	422	334	26.5	1,636	1,282	27.6
Allowance for Borrowed Funds Used During Construction	(176)	(219)	(19.7)	(841)	(1,178)	(28.6)
Net Interest Expenses & Charges	$4,071	$3,876	5.0	$16,287	$15,267	6.7
Net Income Before Extraordinary Items	$5,448	$5,723	(4.8)	$16,554	$18,116	(8.6)
Extraordinary Items	0	0	N.M.	(36)	(127)	(72.0)
Cumulative Effect of a Change in Accounting Principle	0	296	N.M.	0	156	N.M.
Net Income	$5,448	$6,020	(9.5)	$16,518	$18,145	(9.0)
Preferred Dividends Declared	489	505	(3.2)	2,001	2,080	(3.8)
Net Income Available for Common	$4,959	$5,514	(10.1)	$14,517	$16,065	(9.6)
Common Dividends Declared	3,433	3,361	2.1	13,000	12,610	3.1
Additions to Retained Earnings	$1,526	$2,153	(29.1)	$1,517	$3,455	(56.1)
Average Shares Outstanding (Millions)	7,200	7,082	1.7	7,238	7,149	1.2
Earnings Per Share Before Extraordinary Items and the Cumulative Effect of a Change in Accounting Principle[2]	$0.69	$0.74	(6.8)	$2.01	$2.24	(10.3)
Earnings Per Share After Extraordinary Items and the Cumulative Effect of a Change in Accounting Principle[2]	$0.69	$0.78	(11.5)	$2.01	$2.25	(10.7)
Common Dividends Per Share[2]	$0.48	$0.47	2.1	$1.80	$1.76	2.3

Source: Edison Electric Institute Survey Data and Standard & Poor's Compustat II Database Service.
[1]Revenues are adjusted for intra-industry electricity sales for resale.
[2]Based on average shares outstanding as reported to Edison Electric Institute by survey respondents and adjusted for stock splits.
[3]Percent changes may reflect independent roundings.
r-revised to reflect company restatements.
N.M.-Not Meaningful.

Table 2
Investor-Owned Electric Utility Industry Balance Sheet
(Millions of Dollars)

Assets	March 31, 1991	March 31, 1990r	% Change[2]
Utility Plant[1]			
Utility Plant (Including Nuclear Fuel)	$519,084	$489,394	6.1
Less Accumulated Depreciation	159,850	147,729	8.2
Total	$359,234	$341,666	5.1
Construction Work in Progress	21,760	33,139	(34.3)
Net Utility Plant	$380,994	$374,805	1.7
Investments	27,250	26,889	1.3
Current Assets	44,619	43,018	3.7
Deferred Debits	35,836	36,833	(2.7)
Total Assets	$488,699	$481,545	1.5
Capitalization & Liabilities			
Capitalization			
Common Stock	$94,929	$93,282	1.8
Retained Earnings	52,949	53,514	(1.1)
Preferred Stock	25,494	25,492	0.0
Long-Term Debt	171,166	169,303	1.1
Total Capitalization	$344,538	$341,591	0.9
Current Liabilities			
Short-Term Debt	$10,803	$9,356	15.5
Long-Term Debt Due Currently	7,818	7,140	9.5
Other Current Liabilities	36,512	34,816	4.9
Total Current Liabilities	$55,133	$51,313	7.4
Deferred Credits			
Capital Lease Obligations, Non-Current Portion	$3,786	$3,964	(4.5)
Accumulated Deferred Income Taxes	51,908	50,384	3.0
Accumulated Deferred Investment Tax Credits	15,351	15,738	(2.5)
Other Deferred Credits	17,983	18,555	(3.1)
Total Deferred Credits	$89,028	$88,641	0.4
Total Capitalization & Liabilities	$488,699	$481,545	1.5

Source: Edison Electric Institute Survey Data and Standard & Poor's Compustat II Database Service.

[1]Includes non-electric utility plant.
[2]Percent changes may reflect independent roundings.
r-revised to reflect company restatements.

attributable to increases in purchased power and net interchange (up 17.9 percent), other operation and maintenance (up 4.4 percent), depreciation and amortization expenses (up 7.4 percent), and deferred income taxes (up 55.5 percent).

For the first quarter, deferred taxes increased by $238 million, and federal and other income taxes decreased by $164 million. The principal reason for the change in these tax items is the offsetting impact of a regulatory decision affecting one company. That decision determined that a portion of the financial stabilization revenue collected by the company should be offset against the company's recovery of its investment in an abandoned project.

As a result of these changes in operating expenses and income, the operating ratio for the first quarter of 1991 inched up to 76.9 percent from the 76.6 percent recorded for the first quarter of last year.

Other utility operating income for the quarter increased 15.4 percent from $580 million in 1990 to $670 million this year, primarily due to higher demand for natural gas in the first quarter of 1991, which was colder than the first quarter of the previous year.

On a quarter-to-quarter basis, allowance for funds used during construction (AFUDC) decreased 30.3 percent from $551 million last year to $384 million this year. The decline was caused by the inclusion of two recently completed nuclear units in the ratebase. As a percentage of net income available for common, AFUDC decreased from 16.4 percent in the first quarter of 1990 to 11.2 percent in the first quarter of 1991. Toal phase-in plan accruals also decreased, dropping 65.3 percent from $575 million to $199 million.

The pre-tax interest coverage ratio with AFUDC decreased 9.9 percent from 2.64 times for the twelve-months ending March 31, 1990, to 2.48 times for the twelve months ending a year earlier. The drop in the coverage ratio was primarily due to lower writeoffs (included in other income and deductions) during the first quarter of this year than for the same quarter of last year.

The return on average common equity before extraordinary items was 9.9 percent for the year ending March 31, 1991, down from the 10.9 percent reported for the previous year. If nonrecurring items that reduced income are excluded, the return on average common equity for the year would have been 12.6 percent.

Construction work in progress (CWIP) decreased from $33.1 billion as of March 31, 1990, to $21.8 billion one year later. CWIP as a percentage of net plant in service dropped from 9.7 to 6.1 percent. Associated with the decrease were a 6.1 percent increase in utility plant and an 8.2 percent increase in depreciation and amortization. (See Table 2.)

Investments increased by 1.3 percent from $26.9 billion at the end of the first quarter of 1990 to $27.3 billion at the end of the first quarter of 1991. The modest increase reflects one company's sale of a subsidiary representing approximately $2 billion in assets.

The common equity capitalization ratio decreased slightly from 43.0 percent for the twelve months ending March 31, 1990, to 42.9 percent for the twelve months ending March 31, 1991. The proportion of preferred stock in the capitalization ratio decreased from 7.5 to 7.4 percent. Total capitalization increased 0.9 percent. Common stock increased by 1.8 percent, long-term debt increased by 1.1 percent, and retained earnings declined by 1.1 percent.

Tables 1 and 2 are based on unaudited reports submitted by a sample of investor-owned electric utilities. With the use of the Standard & Poor's Utility Compustat II database, data are adjusted to represent the entire investor-owned electric utility industry. The data have also been revised to reflect all company restatements.

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STATISTICAL REVIEW

FIRST QUARTER SALES UP 0.7 PERCENT

Relatively strong growth in residential sales combined with a slight drop in industrial sales to produce a modest 0.7 percent increase in first quarter electricity sales by investor-owned electric utilties. (See Table 1.) Compared to the first quarter of 1990, residential sales grew by 1.9 percent, and commercial sales grew by 1.3 percent. Industrial sales dropped by 0.7 percent.

The residential class also saw the greatest increase in the number of customers—1.3 percent. Since that class constitutes 88 percent of the total number of customers served by investor-owned electric utilities, it is not surprising that the number of total customers also grew by 1.3 percent. The commercial and industrial classes grew by 1.1 percent.

Total revenues grew by 4.4 percent on a quarter-to-quarter basis. Residential revenues were up 5.5 percent; commercial, 4.8 percent; and industrial, 2.1 percent.

On an annual basis, total sales increased 1.8 percent, total customers increased 1.4 percent, and total revenues increased 4.2 percent. The commercial class saw the largest increase in sales (2.5 percent). The industrial class experienced the largest increase in number of customers (3.4 percent). The residential class contributed the largest increase in revenues (4.7 percent).

Contributed by Edison Electric Institute's Statistics Department.

Table 1
First Quarter Customer, Sales, and Revenue Data for Investor-Owned Electric Utilities

	Three Months Ending March 31,			Twelve Months Ending March 31,		
	1991	1990	% Change	1991	1990	% Change
Number of Customers						
Residential	74,348,437	73,411,947	1.3	73,885,043	72,879,397	1.4
Commercial	9,309,535	9,203,775	1.1	9,283,775	9,143,785	1.5
Industrial	381,268	377,248	1.1	393,222	380,151	3.4
Street & Highway	142,568	137,500	3.7	142,444	135,399	5.2
Other Public Authorities	167,484	155,874	7.4	159,732	155,350	2.8
Railroads	24	22	9.1	24	22	9.1
Interdepartmental	476	473	0.6	475	465	2.2
Total Customers	84,349,792	83,286,839	1.3	83,864,715	82,694,569	1.4
Electricity Sales (MWh)						
Residential	176,335,644	173,073,477	1.9	670,570,928	657,008,177	2.1
Commercial	145,898,869	144,023,084	1.3	611,138,265	596,197,877	2.5
Industrial	170,325,160	171,577,166	(0.7)	715,601,429	707,722,059	1.1
Street & Highway	2,746,343	2,728,425	0.7	10,525,349	10,440,309	0.8
Other Public Authorities	12,862,214	13,005,496	(1.1)	50,858,208	50,078,652	1.6
Railroads	657,765	628,555	4.6	2,516,282	2,483,791	1.3
Interdepartmental	205,388	432,609	(52.5)	1,226,459	1,905,681	(35.6)
Total Sales	509,031,383	505,468,782	0.7	2,062,436,920	2,025,836,546	1.8
Revenues ($000)						
Residential	14,088,904	13,356,819	5.5	55,155,888	52,675,061	4.7
Commercial	10,881,568	10,383,039	4.8	45,925,200	43,909,527	4.6
Industrial	8,302,898	8,131,930	2.1	35,374,729	34,338,567	3.0
Street & Highway	321,641	309,819	3.8	1,248,766	1,220,640	2.3
Other Public Authorities	659,066	620,610	6.2	2,586,428	2,531,537	2.2
Railroads	42,665	39,361	8.4	165,945	160,977	3.1
Interdepartmental	21,261	26,822	(20.7)	98,197	106,385	(7.7)
Total Revenues	34,318,004	32,868,401	4.4	140,555,153	134,942,694	4.2

Source: Edison Electric Institute, Statistics Department.

ELECTRIC PERSPECTIVES
The Magazine for Management in America's Investor-Owned Electric Utilities

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Utility Diversification– It Takes More Than Money

Opportunities for profitable ventures will be determined by a combination of local circumstances and national trends, but the ultimate success of nonutility investments will depend more on doing the thing right than on doing the right thing.

It takes more than money and desire to diversify successfully. This realization has been brought home in recent years to more than a few electric and gas utilities. The lures of uncapped returns on equity and coffers bulging with cash led the majority of utilities to pursue a panoply of diversification strategies in the 1980s. Some companies dabbled in a little of this and a little of that. Others dived head first into major acquisitions. Some dabblers and divers stuck with businesses related to the electric or gas utility business; others invested in sports teams, radio stations, orange groves, and the like. Results have been mixed.

The mixed results have led utility executives to question whether they should be diversifying at all and to wonder what the keys are to diversifying successfully. Should they stay closely related to the utility business? How do they pick the right investment—i.e., what is the magic industry that will produce above average returns for them? Or, should all new businesses be grown from assets inside their utilities that can be marketed on an unregulated basis?

Finding the keys to diversification success is going to be vital to this majority of U.S. utilities.

Where is the Industry Going?

The number of utilities diversifying and the funds committed to diversification will increase in the 1990s because the forces that originally led to diversification will continue:

- Positive cash flows continue, and more capital is available than can be productively employed in slow-growth utility businesses.
- Stable, well-run utility business allow management the time to concentrate on other faster growth, higher return activities.
- Regulated, allowed returns on utility investments are declining.
- Growth of the nonutility power supply business, which transfers utility business opportunities to nonutility generators, is opening unique opportunities.

Despite these forces, however, not all utilities will choose to diversify. The ultimate result will be an industry that comprises three very different kinds of companies:

- Reapers—the focused, generally small, slow-growth, undiversified companies.
- Warriors—the large diversified enterprises with one or more utility subsidiaries.
- Dabblers—the hybrid, unfocused, and tentatively diversified utility companies.

The reapers will choose not to diversify. They will harvest for their shareholders the cash returns of earlier, large utility investments. They will be clear of purpose but smaller and slower growing than most warriors or dabblers. Nevertheless, reapers will be highly competitive; they will pose continual challenges to and be benchmarks for comparisons with their utility neighbors who diversify and are possibly less focused, or who run into trouble with their diversification options. At the same time however, reapers will, in general, offer fewer challenges and opportunities for their employees and contribute less than they might to the economic development of their territories. They will also run a higher than average risk of being acquisition targets of their more aggressive neighbors.

Warriors will set revenue and earnings growth targets of 6 percent or more and diversify in a significant way. They will recognize and accept the extra risk inherent in major diversification and will chart a course of solid, above average growth with the objective of becoming large, diversified enterprises. If successful, warriors will become major economic entities with enormous financial clout, providing benefits to utility customers, rewards for their employees, and above average returns for their shareholders. This aggressiveness, however, will bring a degree of risk that could negatively affect key stakeholders; managing this risk will be company's primary challenge.

The dabblers will diversify, but they will lack the confidence to go about it in any but an insignificant and unfocused way. They will not have the aggressiveness that can help them succeed in competitive lines of business. Dabblers will probably not be

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Christopher B. Harris / Uranography

particularly successful, either as utilities or as diversified enterprises. They will be prime takeover candidates.

Diversification Results

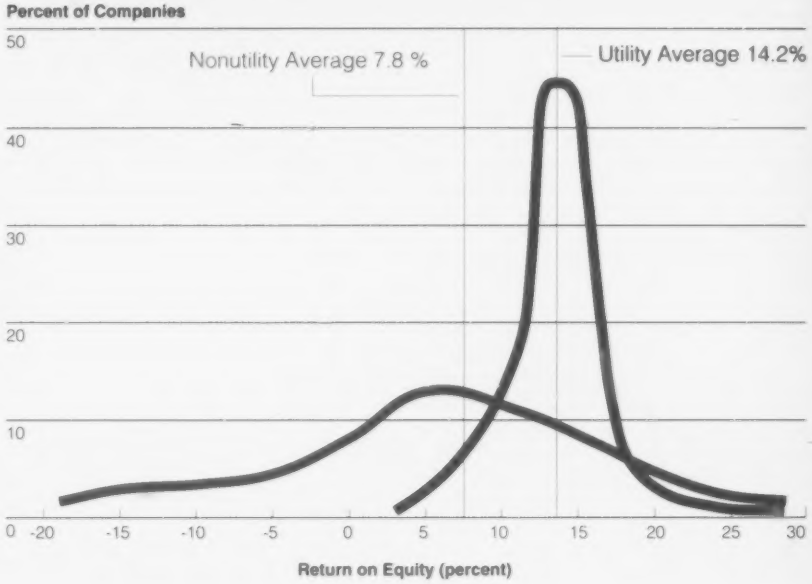
Up to now, both warriors and dabblers have found diversification to be less successful than they expected—there have been fewer winners than losers. For example, in 1988 diversifying utilities produced an average return on their nonutility equity of only 7.8 percent, while the utility subsidiaries of these entities averaged 14.2 percent return on the equity they invested. (See Figure 1.)

The relative returns on utility and nonutility investments experienced by diversifying utilities will reverse in the 1990s. Average returns on utility equity will decline as regulators establish lower allowed rates of return. At the same time, nonutility returns should increase as utilities incur fewer startup costs for their new businesses, become more experienced in operating nonutility businesses, and improve their corporate development techniques. In fact, in 1989 a sample of 35 diversifying utilities produced a median return on nonutility equity of 10.0 percent, while their average return on utility equity dropped to about 13.5 percent.

Furthermore, diversifying utilities that are not realizing satisfactory nonutility returns will be pressured to improve investment results or get out of nonutility businesses. Shareholders will actively challenge management (as some have already) if nonutility results do not meet expectations or if management does not clearly communicate its long-term plans and expectations for nonutility and consolidated returns. Regulators and customers will continue to scrutinize diversification's impact on the utility business and its rates. Poor or mediocre diversification performance will invite regulatory investigations and possible prohibitions on continuing. Utility managers themselves will question the appropriateness of resource allocations if poor nonutility investments threaten, or appear to be hindering, the core utility business. Some diversifying utilities will not meet these challenges and will end their diversification forays, thereby increasing industry average returns.

Figure 1

Average Return on Equity Investment: 1988



Of course, some utilities have earned more than others on their nonutility investments. A limited number have exceeded the average return on their utility investments, and a select few have even earned more than 20 percent on their nonutility investments.

In 1990 Cresap began a search for the secrets to success of these above-average performers. We reviewed the performance of approximately 50 diversifying utilities. These utilities, on average, invested in six different businesses, with oil and gas, independent power, real estate, passive financial, utility services, and coal and minerals being the most common. We looked for factors that might correlate with high returns:

- Industries in which the utilities invested—specifically, whether the industries were related or unrelated to the utility business.
- The breadth of diversification—that is, the number of different industries in which the utilities were invested.
- The sizes of the investments.
- The ages of the diversification programs.
- The percentage of total corporate assets and equity invested in nonutility businesses.

Our conclusion was surprising. With the possible exception of the

sizes of the investments, there was no significant relationship between good performance and the characteristics of the investments.

Keys to Success

So, there is no magic formula. The keys to success are within the utilities themselves and especially within the chief executives who run them. Without question, a utility's diversification program is a reflection of its chief executive officer's style and vision. We found that those electric utilities with the best-performing investments have characteristics in common and use many of the same approaches and tactics for making investments.

These companies are aggressive and have corporate cultures that accept the risks and challenges involved in entering nonutility businesses. They know that these increased risks can only be assumed prudently by adopting processes and mechanisms that limit or control risk. These winners have confidence about their abilities to diversify successfully. They clearly communicate their diversification objectives, plans, challenges, and opportunities to their employees, shareholders, and other interested parties, thereby controlling perceptions and expectations and avoiding pressure on management to take inappropriate actions.

The winners systematically search for investment opportunities that best fit their objectives and management styles; they are not content to wait for opportunities to be brought to them. They do not make arbitrary decisions to invest in related or unrelated businesses. They are more interested in an industry's potential returns and the amount of capital necessary to achieve a meaningful market share that would enable them to be more than passive investors. They work hard to determine the actions they can take to realize greater value from investments than competing investors might be able to achieve.

Their analyses are painstakingly thorough, designed to identify industry/market segments and niches and to help them understand why an industry is structured the way it is. They draw on external resources when necessary to conduct special investigations such as market and competitor analyses. They identify the key success factors in an industry and relate them to their own strengths and abilities. The approaches they use are based on the strategies and tactics employed by the most successful diversifying companies. They understand clearly how they will be able to add value before they make investment decisions. Their discipline includes evaluating options objectively and logically against investment criteria, goals, strengths, and weaknesses.

The winners are also seriously committed to their investments, and they take a long-term perspective. They define the objectives of their diversification programs and develop strategies for achieving them. They do whatever is necessary to obtain the talent to manage their investments actively, even if that talent must come from outside. They provide the management incentives and rewards appropriate for the risks related to unregulated investments, and they hold these managers accountable for the results achieved. They also provide the human resources and funds needed to support their strategies.

In short, the keys to success for utility diversifiers in the 1990s will be found mainly in the processes they use to make their investments. Those processes must enable utility managements to accomplish several things:

There is no magic formula. The keys to success are within the utilities themselves and especially within the chief executives who run them. Without question, a utility's diversification program is a reflection of its chief executive officer's style and vision.

- execute systematically,
- be culturally and financially ready,
- manage shareholder expectations,
- use proven approaches and tactics for developing strategies and implementing them,
- target meaningful market shares,
- demand accountability,
- employ necessary expertise, and
- compensate appropriately.

For companies that are considering diversification, the message is clear: look carefully before you leap. There are no magic industries or investments guaranteed to produce above average results. The key to success will be a matter of doing the thing right, not doing the right thing.

Still, it is informative to identify exactly what things U.S. utilities have been doing with their tens of billions of dollars in nonutility investments. More than three-fourths of these investments have been made in four fields—passive financial instruments and active equity investments in oil and gas exploration and production, independent power production, and real estate. Over 80 percent of the utilities we surveyed had invested in at least two of these fields, and half of them had invested in three or all four. Because Cresap believes that this decade will see some significant changes for each kind of investment, it may be helpful to review their prospects and discuss what could be done to make them successful.

Passive Financial Investments

Virtually all diversifying utilities have invested in passive financial instruments such as leveraged leases, venture capital and leveraged buyout funds, and preferred and common stocks. These investments produced good returns in the 1980s and, for many companies, were convenient places to park excess funds while searching for active investments.

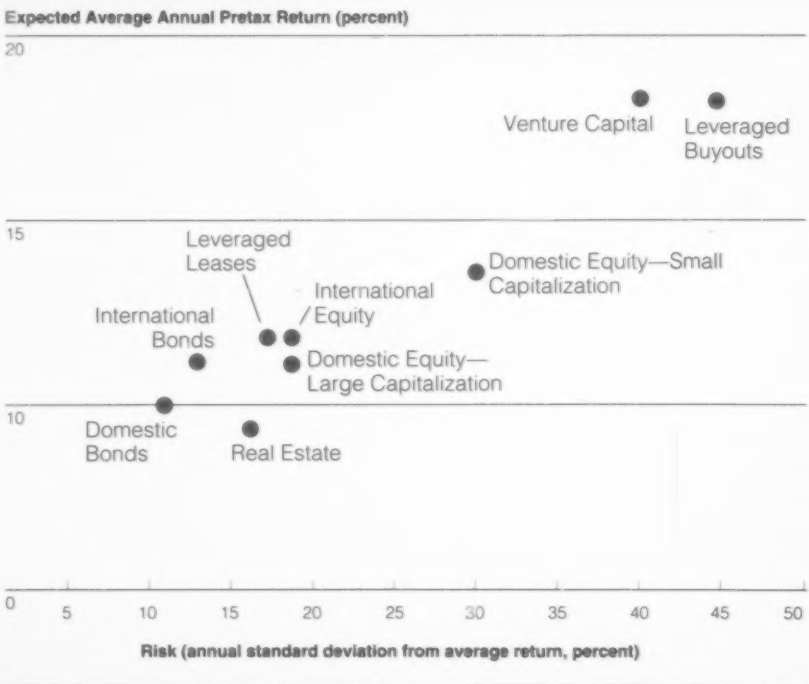
In the 1990s, however, passive investment returns will be lower than they were in the 1980s and will continue to vary widely by their risk/return profiles. (See Figure 2.) Returns will be driven down as the growth of available investment funds exceeds the supply of good deals. (This growth will be brought about by a continuing inflow of funds from foreign investors, an increase in the U.S. savings rate, and shifts in capital requirements away from capital-intensive industries.) As returns drop, utilities will find it increasingly difficult to exceed their recent utility after-tax returns on equity without leveraging their passive investments significantly. This will be true even as returns on utility equity drop to 13 percent and lower in the 1990s.

Passive investments, however, will still make sense in the 1990s from the standpoint of an asset allocation because of the diversity they add to a corporation's investment portfolio. They can be especially useful in achieving the optimum portfolio structure for a desired risk/return level when balanced with highly leveraged investments. (See Figure 3.) Also, lower allowed utility returns in the 1990s will make it easier for the returns on passive financial investments to compare favorably with utility returns.

Success factors: The most critical factors for success in passive financial investing have not changed: selecting above average investment managers (originators) and tracking their performance against pre-determined investment goals, objectives, and criteria. Most above average in-

Figure 2

Expected Risk/Return Profiles on Passive Financial Investments



Better returns will also come to investors who focus on the strategic worth of transactions, such as leveraged buyouts, rather than on the pure financial appeal of the deals.

vestment opportunities for the passive financial investor will occur in select segments of an investment category, or niches. Other opportunities will come from investing internationally as U.S. techniques like venture capital funds are exported. Better returns will also come to investors who focus on the strategic worth of transactions, such as leveraged buyouts, rather than on the pure financial appeal of the deals.

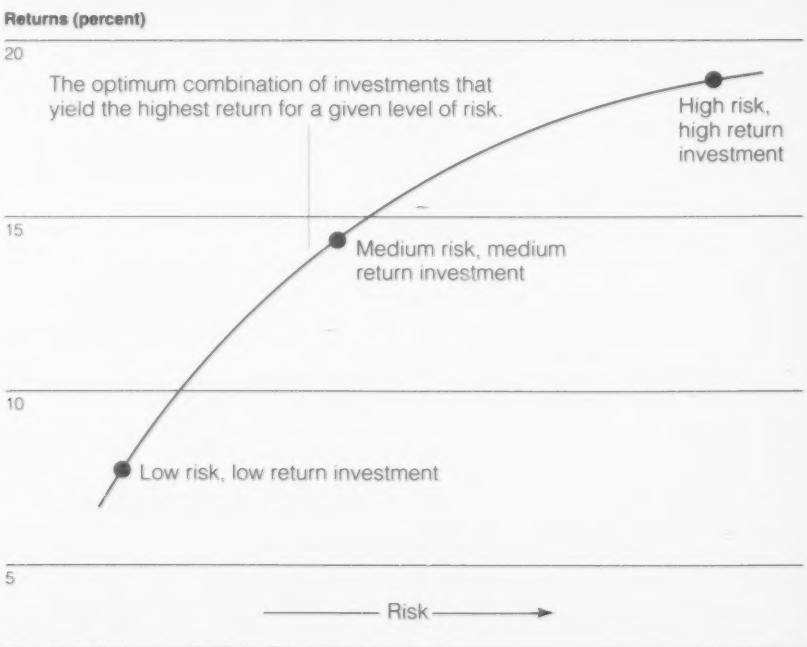
Oil and Gas Exploration and Production

Utilities have been particularly inclined to invest in oil and gas exploration and production (E&P). Over 50 percent of our sample group has done so. Oil and gas E&P companies have, in our opinion, good prospects for the 1990s generally but will face near-term cyclical volatility. Worldwide energy consumption has risen 11 percent since 1985 and should continue to rise after the current recession runs its course—a good indication that the worldwide energy supply/demand balance will tighten in the 1990s. U.S. oil production has fallen 14 percent in the same period; this trend will continue. Finally, OPEC's share of the non-Communist world's oil production has risen from 41 percent to 48 percent in this period, and we believe that it will continue to rise in the 1990s. Thus, barring a prolonged worldwide recession, oil prices will increase even without taking into account war-inflicted damage to Persian Gulf production facilities.

Historically, E&P company profitability has tracked fluctuations in oil prices. (See Figure 4.) As a result, oil and gas prices will continue to deter-

Figure 3

Optimum Portfolio Structure at Desired Risk/Return Levels



mine the revenue and earnings of E&P companies. Oil price increases will be more sustainable after 1992 when OPEC oil production will approach its capacity.

Natural gas price increases are generally more stable and predictable than oil prices both because gas has primarily a domestic market and because the prospect for a sizable U.S. natural gas discovery is highly unlikely. Nonetheless, demand for natural gas is expected to increase during the 1990s for several reasons: rising industrial production; increased generation of electricity from natural gas for peaking, cogeneration, and central station power plants; and environmental restraints on coal combustion. Moreover, the natural gas "bubble" is diminishing and should disappear in the early 1990s Thus, natural gas prices, like those of oil, will rise through 1995 and beyond, averaging perhaps a 9 percent increase annually.

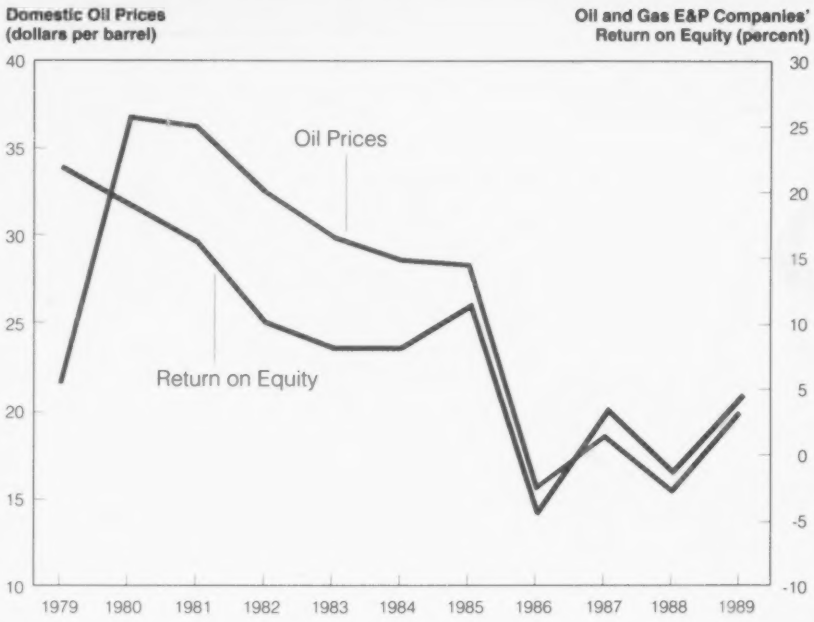
The E&P market will continue to be attractive to investing utilities in the 1990s because of improving operating returns. In addition, many utilities have large sums available for investment, and the oil and gas industry is one in which sizable investments must be made to secure a viable market presence. Diversifying utilities will continue to invest primarily in U.S. fields and will not be competing directly with the major oil companies. The majors need to find large new reserves to feed their vertically integrated companies and are directing the bulk of their investments outside the U.S. where the prospects for major discoveries are much greater. Thus, well-financed, second-tier E&P companies will have competitive advantage in the U.S. niche.

The E&P market will also have strategic appeal to diversifying utilities. Natural gas supplies may be coordinated with a utility's independent power project needs as well as with the utility's own energy requirements, thereby producing synergies between nonutility and utility businesses. Finally, E&P earnings are generally counter-cyclical to a utility's, thus providing a leveling impact—highly valued by Wall Street analysts—on the utility enterprise's rate of return.

Success factors: The keys to success for utilities diversifying into independent oil and gas E&P in the 1990s will be to look for companies that are increasing their revenue positions economically and operating efficiently. Successful E&P companies will increase proved reserves using better geological resources and practices. They will invest effectively through joint venture participation, increased ownership in invested properties, and adjacent field acquisitions. They will also enhance their economics and efficiency by improving production through remedial programs and strong engineering resources. Some will also integrate vertically into independent natural gas marketing to secure more attractive contracts and improve pricing flexibility.

Figure 4

Oil Prices and E&P Returns: 1979-89



Independent Power Production

Diversifying utilities are also focusing on the independent power, or nonutility, generation business. The appeal is simple. It will be the best place to maintain or gain power generation market share in the 1990s. Approximately 40 utilities have already invested in the IPP business, and more are considering it. By the year 2000, the IPP business will nearly triple its current share of

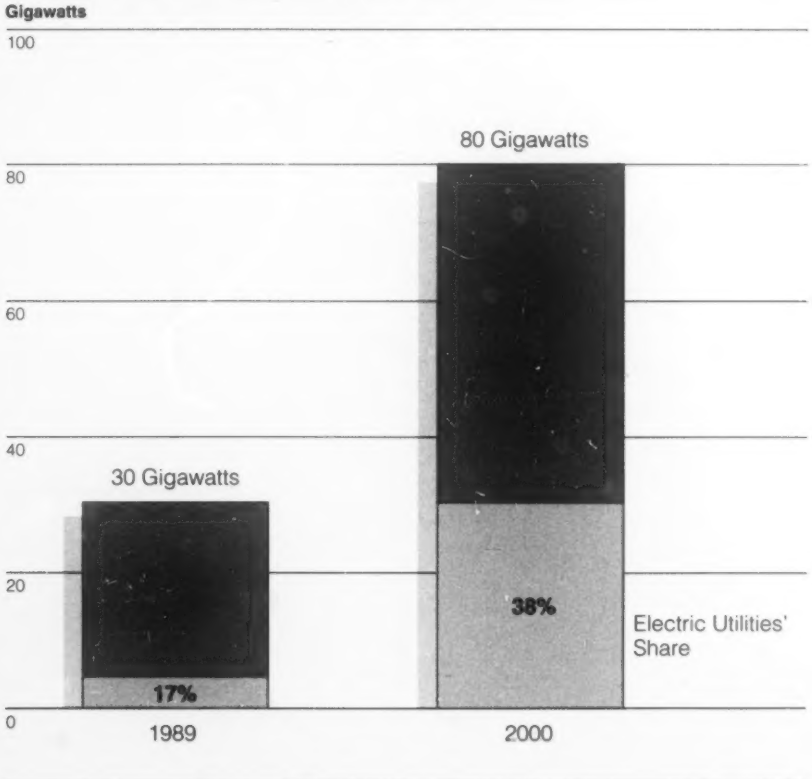
the power generation market and grow nearly 10 percent per year—15 times as fast as regulated utility production capacity is expected to grow. Electric utilities will increase their investments in the IPP market, becoming major players by the end of the decade. (See Figure 5.) A number of gas utilities are also entering this market, and some are forming joint ventures with electric utility IPP subsidiaries. Because many of these utilities have similar strengths and capabilities, and similar goals and objectives for entering the IPP business, competition for capturing viable shares of the business will be intense.

This competition among utilities—as well as the many nonutility companies also pursuing the IPP business—will cause target returns (especially for new projects) to decline until the mid-1990s. In many areas of the country, project returns will also be driven down because regulators are establishing lower avoided cost rates than those initially set during the 1980s. Further, many states are now adopting competitive bidding processes that are heavily weighted to the low-cost bidder and that, in effect, establish avoided cost rates as maximums rather than minimums. Finally, just as in the passive financial investment arena, capital from passive investors for these projects will continue to be

Diversifying utilities are also focusing on the independent power, or nonutility, generation business. The appeal is simple. It will be the best place to maintain or gain power generation market share in the 1990s.

Figure 5

IPP Market by Ownership: 1989 and 2000



readily available until returns drop too low.

Cresap believes that project returns will stabilize then increase in the middle to late 1990s. By that time, the IPP industry will have undergone significant consolidation, and many of the high-cost producers or developers will have been shaken out of the market. Furthermore, we believe that, on average, avoided cost rates will begin climbing throughout the country as reserve margins narrow. Bidding processes will emphasize factors other than low cost—such as environmental, reliability, and quality requirements—that will support premium pricing for power at very little added cost to the sophisticated developer or producer. Finally, returns should increase because key industry participants will tend to be specialists and niche players who are low-cost suppliers in their areas of expertise.

Success factors: A key to success during the 1990s for IPP industry participants will be improving their competitive positions. They will have to bring value to their investments if they are to equal or exceed industry median returns. Successful IPP participants will not invest randomly in "good" projects as they come along; instead, they will focus on segments of the industry and project types where they can reduce risk and maintain cost advantages. To add value, successful participants will have to specialize in areas such as early stage development, large project financing, construction project management, troubled project turnaround, general plant operations and maintenance, fuel supply, and technological expertise.

Another success factor for regulated electric and gas utility IPP participants will be shifting from deal-based to strategic investments. Utilities will no longer be able to achieve the high returns experienced in the 1980s when originators and developers promoted participation to generally passive investors. A utility's IPP involvement will instead be part of a well-planned strategy that emphasizes maintaining market share of the power generation business and adding value drawn from the utility's specific strengths.

Cresap believes that both active and passive real estate investors, on average, will experience depressed returns in the 1990s—a culmination of several factors that have been building in the industry in the past few years.

Real Estate

Fully three-fourths of all diversifying utilities have made real estate investments of one kind or another. Many of these investments are driven by the utilities' desire to enhance the economic development of their service territories and to take advantage of underutilized assets (land) carried on their books.

Specific returns on the industry's real estate investments are not generally available. To date, utilities appear to have been relatively successful in producing above-average returns, but many of these returns reflect the low recorded cost of the land utilities contributed to development projects. In the 1990s many utilities will no longer have under-used land resources to contribute to real estate ventures.

Cresap believes that both active and passive real estate investors, on average, will experience depressed returns in the 1990s—a culmination of several factors that have been building in the industry in the past few years. Overcapacity driven by demographic trends and overbuilding will continue throughout the decade, forcing down operating earnings. The banking S&L crisis, with the attendant swelling in the number of foreclosed properties, will depress real estate prices until supply and demand reach equilibrium. Surplus development money from pension funds and foreign investors will continue to prompt marginal deals and

force yields and capitalization rates down. Environmental liabilities will also be a growing concern in property transfers in the 1990s, adding to the cost and complexity of transactions and putting more downward pressure on real estate returns.

Of course, real estate is a very regional and segmented industry, and, although returns are expected to be poor to modest in the 1990s, selected segments may be attractive. However, the few attractive investments now available may soon be overwhelmed by the large supply of funds available for real estate investment.

Success factors: Making successful real estate investments, both active and passive, will be more difficult in the 1990s than it has been for the past 15 years. Extraordinary discipline and selectivity will be required. Utilities will have to perform rigorous analyses of existing and prospective investments. They will have to have a national focus, searching for turnaround opportunities in select regional markets. They will need to avoid development-stage projects because expected returns will not make up for the greater risk associated with them. Instead, diversifying utilities should focus on refurbishment and revitalization of existing properties. Finally, utilities will have to balance their risks across portfolios of building types and regions. Even so, asset allocations to this investment sector should be minimal, or zero, for the first few years of the decade.

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The Bottom Line

In short, although passive investments will still make sense from the standpoint of balancing a portfolio and because lower utility returns will make them more attractive than they otherwise would be, it appears that well-managed active investments will be better prospects for diversifying utilities in the 1990s. Of the areas in which most utilities have historically made their active investments, Cresap believes oil and gas has the best prospects in the 1990s. The IPP market is next, offering an added strategic value. Real estate has relatively unattractive prospects. At the same time, however, wise utilities will realize that these better prospects are not necessarily the only areas in which they should place their funds. Each utility must carefully analyze its specific situation and identify what it would take to gain a meaningful position in a particular industry or industry segment. Further, many other investment areas, including the utility business itself, could fit a particular utility's strategic plans and make optimum use of its resources. These possibilities can only be identified and realized by thoroughly assessing the company's unique circumstances, aggressively employing experienced personnel and other resources, and applying proven approaches and tactics.

Likewise, utilities cannot ignore the investments they have already made. Any diversificaton venture must be professionally managed with continuous attention to the prospects for its business area, to the changing dynamics of its market, and to the competitors operating in that market. Just as doing the thing right is more important than doing the right thing when selecting nonutility investments, so too the key to success is managing investments right, not managing the right investments.

STATISTICAL REVIEW

ELECTRIC UTILITIES REMAIN MOST CAPITAL-INTENSIVE INDUSTRY

The investor-owned electric utility industry countinues to be the most capital-intensive industry in the U.S. economy. In 1989, investor-owned electric utilities on average had to invest $3.08 to earn $1.00 of annual revenue, making the industry approximately 1.6 times more capital intensive than mining, the next most capital-intensive industry, and more than 3.4 times more capital intensive than the average for all forms of manufacturing. (See Table1.)

The industry's need for greater capital investment is even more stiking when contrasted with the wholesale trade industry, which requires an investment of only $0.36 for each dollar of annual revenue. Or, to look at it another way, it takes only four months for wholesale trade's revenues from operations to equal its investment in fixed assets while to takes the investor-owned electric utility three years and one month.

Although the asset turnover ratio—the amount of investment in assets required to earn a dollar of annual revenue—drifted upward for most of the 1980s, 1989 marked the second year in a row that the ratio dropped slightly. No one factor can be singled out as being responsible for the turnaround.

Contributed by Edison Electric Institute's Finance & Accounting Department.

Table 1
Capital Assets Required per Dollar of Revenue for Major Industries—1989

Industry	Requirement
Investor-Owned Electric Utilities[1]	$3.08
Mining[2]	$1.87
Communications[3]	$1.01
Railroads[4]	$1.69
Investor-Owned Gas Utilities & Pipeline Industry[5]	$1.46
Manufacturing	
Nondurable Manufacturing Industries	
Food & Kindred Products	$0.76
Textile Mill Products	$0.69
Paper & Allied Products	$0.92
Printing & Publishing	$0.96
Chemicals & Allied Products	$1.03
Industrial Chemicals & Synthetics	$1.06
Drugs	$1.15
Petroleum & Coal Products	$1.20
Rubber & Miscellaneous Plastic Products	$0.70
Other Nondurable Manufacturing Industries	$0.49
Average of Nondurable Manufacturing	$0.91
Durable Manufacturing Industries	
Stone, Clay, & Glass Products	$1.03
Primary Metal Industries	$0.79
Fabricated Metal Products	$0.69
Machinery Except Electrical	$1.00
Electrical & Electronic Equipment	$0.85
Transportation Equipment	$0.88
Instruments & Related Products	$1.09
Other Durable Manufacturing Products	$0.60
Average of Durable Manufacturing Industries	$0.88
All Manufacturing	$0.90
Retail Trade[2]	$0.53
Wholesale Trade[2]	$0.36

Note: Averages may reflect independent rounding.

[1] Net total electric utility assets, average year-end 1988 and year-end 1989, and electric department operating revenues,1989. *Statistical Yearbook/1989*, Edison Electric Institute, pp.84-5.

[2] Average quarterly assets and total annual sales, 1989. *Quarterly Financial Report of Manufacturing, Mining, and Trade Corporations*, U.S. Bureau of the Census, 1990, first quarter.

[3] Assets, average year-end 1988 and year-end 1989, and operating revenues, 1989. *Moody's Public Utility Manual*, 1990, Vol.1, p.2403.

[4] Net investment in plant and equipment, average year-end 1988 and year-end 1989, and operating revenues, 1989. *Yearbook of Railroad Facts*, Association of American Railroads, p. 1, L1 and p. 25, L111 & L112.

[5] Assets, average year-end 1988 and year-end 1989, and operating revenues, 1988. *Gas Facts*, American Gas Association, 1990, pp. 144 & 153.

FINANCIAL REVIEW

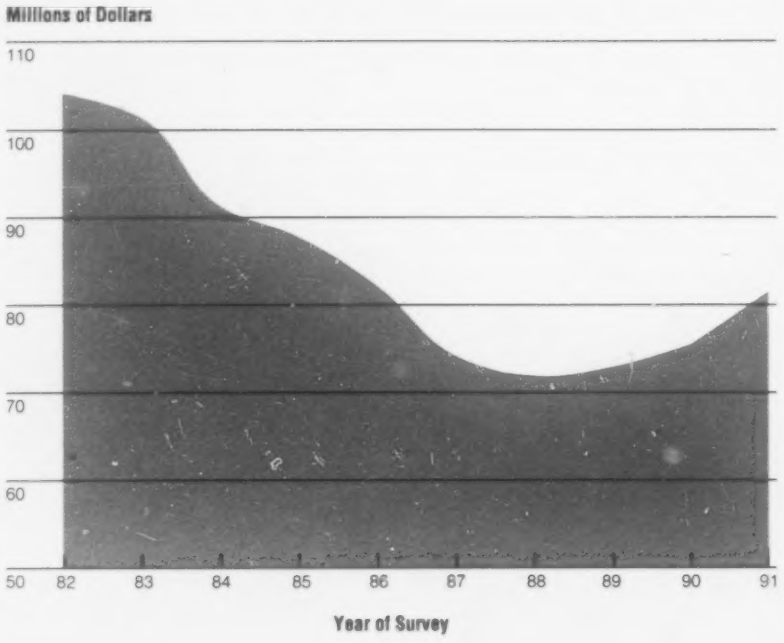
CONSTRUCTION EXPENDITURES PROJECTED TO RISE 6.8 PERCENT

Investor-owned electric companies expect to spend $80.5 billion on electric plant expenditures over the 1991-93 period according to Edison Electric Institute's 1991 Construction Survey. The projection, which includes allowance for funds used during construction, tops last year's 1990-92 forecast by 6.8 percent. Although some of the increase may reflect the anticipated effect of inflation, a real increase in construction spending is clearly evident, as suggested in Figure 1.

The pattern of construction expenditures over the forecast period stands in sharp contrast to the one apparent in Energy Information Administration data for 1989, the latest year for which information is available. Electric generating plant expenditures will account for only 35.6 percent of the total electric utility plant expenditures projected for the three-year period, compared to the 51.8 percent of 1989, and transmission and distribution expenditures will account for 49.9 percent, compared to the 33.2 percent of 1989. (See Table 1.)

According to the EEI survey, electric generating plant expenditures will continue to decline slightly through 1991 and then increase during 1992 and 1993. Total electric utility plant expenditures for 199[illegible] were approximately $500 million lower than projected in EEI's survey last year. This decline is attributable to reductions in prior budgeted construction funds by several companies, in particular those companies which recently [illegible]mpleted large baseload construction programs. These companies instituted vigorous cost reduction programs and cash conservation programs in 1990, as they had not yet begun recovering the cost of past construction through ratebase.

Figure 1
Projected Three-Year Electric Plant Construction Expenditures



Nuclear Generating Plant

Investor-owned electric utility nuclear construction expenditures continued to decline in 1990 and are projected to do so during the 1991-93 forecast period. Nuclear construction declined $1.4 billion in 1990 to $3.4 billion. The total number of operating nuclear power reactors in the total electric utility industry was 112 as of the end of 1990, including the three placed in service during the year. Projected nuclear plant construction expenditures for the investor-owned segment of the industry will be for the one remaining plant still under construction, retrofitting of existing plants to meet regulatory requirements, and major maintenance.

Coal Generating Plant

Expenditures for coal-fired generating facilities decreased from $4.0 billion in 1989 to $3.5 billion in 1990 and are projected to remain at approximately that amount in 1991. The 1990 coal expenditures exceeded nuclear expenditures for the first time since 1975. During 1990, the investor-owned electric utility industry placed four new coal-fired generating units into service with a total capacity of 1,015 megawatts.

Table 1
Estimated Electric Plant Construction Expenditures
(Millions of Dollars)

		Forecast			
	1990p	1991	1992	1993	1991-93 Total
Electric Generating Plant					
Nuclear	3,391	2,794	2,577	2,323	7,693
Coal	3,471	3,427	4,463	5,254	13,144
All Other	2,067	2,590	2,395	2,801	7,786
Total Electric Generating Plant	8,929	8,811	9,435	10,378	28,624
Transmission & Distribution					
Transmission Facilities	2,505	3,178	3,729	3,775	10,682
Distribution Facilities	9,473	9,536	9,821	10,115	29,472
Total T&D Facilities	11,978	12,714	13,550	13,889	40,153
General and Miscellaneous Plant	1,971	2,402	2,288	2,110	6,801
Nuclear Fuel	1,500	1,468	1,755	1,712	4,935
Total Electric Utility Plant	24,378	25,395	27,029	28,090	80,514
AFUDC in Total	1,838	1,413	1,407	1,527	4,347

p=preliminary estimate.
Note: Expenditures by combination companies for gas plant and other non-electric utility plant are not included.

Coal plant expenditures are projected to increase annually, reaching $5.3 billion by 1993. A large portion of this increase will be dedicated to the construction of lignite-fired generating units. It is not clear how much of the increase is related to plans to comply with the 1990 amendments to the Clean Air Act, although it does not appear that significant amounts of the capital costs of compliance are included yet in the survey results.

Other Electric Generating Plant
In this category, actual 1990 expenditures and those projected for 1991-92 decreased from the levels projected in last year's survey due to the reclassification of expenditures for a lignite-fired plant from this category to the coal category. In 1990, the investor-owned electric utility industry placed into commercial operation 17 combustion turbines powered by either natural gas or fuel oil, with a total capacity of 1,058 megawatts. During the forecast period, EEI's *1990 Post-Summer Electric Power Survey* projects that 25 authorized investor-owned combustion turbines fueled by either natural gas or oil, with a total capacity of 2,458 megawatts, will be placed in service.

Transmission and Distribution
Transmission and distribution (T&D) expenditures for generating plant in 1990 were almost $12.0 billion and accounted for approximately half of total electric utility plant expenditures. EEI's construction survey indicates that T&D expenditures will continue to account for approximately half of total electric utility plant expenditures. Approximately three-fourths

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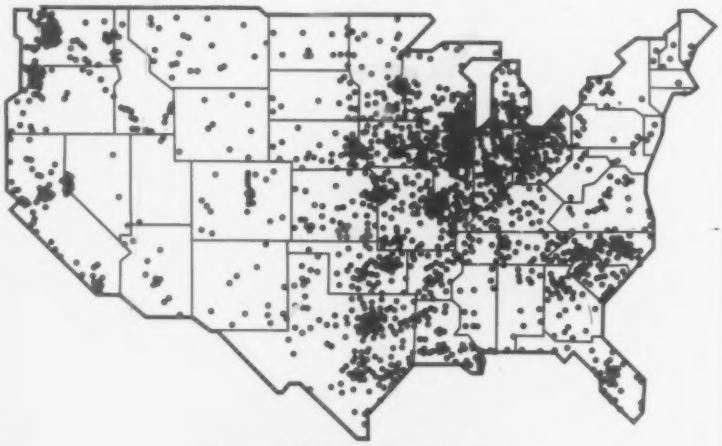

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of total T&D expenditures made from 1991 through 1993 will be committed to the improvement of and additions to distribution facilities. However, while distribution expenditures are increasing at about or slightly lower than the expected rate of inflation, transmission expenditures are forecast to increase by about 50.1 percent in 1993 over the 1990 level.

AFUDC & Cash Flow

Allowance for funds used during construction (AFUDC) accruals are projected to continue declining over the 1991-93 forecast period from $1.8 billion in 1990 to $1.5 billion by 1993. AFUDC represented 7.5 percent of total electric utility plant expenditures for 1990. The decline in AFUDC is consistent with the completion of most baseload plant construction and reflects the general decline in baseload plant construction expenditures. Interesting to note is that AFUDC goes up slightly in 1993 compared to 1992. The last time AFUDC was projected to increase was 1983.

Companies responding to the survey reported that the annual percentages of internally generated funds for construction, compiled as a simple average, will be 83.8 percent in 1991, 84.7 percent in 1992, and 83.8 percent in 1993.

The 1991 Construction Survey covered 119 companies, which collectively represent 98.5 percent of the assets of investor-owned utility companies. The companies responding to the survey reported that they applied, on average, a 4.5 percent annual rate of escalation, down slightly from the 4.9 percent of last year.

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REGULATORY REVIEW

CLEAN AIR ACT— NO FREE LUNCH

The following is adapted from the author's remarks before the Great Lakes Conference of Public Utilities Commissioners, which was held July 9, 1991, in White Sulphur Springs, WV.

Regulators and utility managements, customers, and securities holders should all be aware of and concerned by the financial implications of the recent Clean Air Act Amendments. The major concerns of all parties affected must be achieving least-cost compliance and assuring recovery of the costs incurred on a timely basis through the regulatory process. If investors are expected to supply the $18.5 billion required for capital expenditures by the year 2000 (estimated by Edison Electric Institute), they will look for far more than the words of assurance offered by some state regulators during Congressional hearings that mandated costs would be passed on to customers.

The Investor's Perspective

Investors in electric utilities have shown a strong disinclination toward companies that require external financing for capital expenditures. This disinclination is due in part to the past and ongoing application of after-the-fact prudency reviews. During 1990, for example, construction related disallowances for investor-owned electric utilities amounted to more than $2 billion, bringing the total of such disallowances in recent years to more than $15 billion. It is also related to the fact that the rewards for prudently expended funds are

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limited. For example, Regulatory Research Associates reports that for the twelve months ending March 31, 1991, the weighted earned return on average common equity for their 80-company composite was 11.2 percent, extending the decline they have observed every year since 1984 when earned returns were 14.9 percent. They also report that returns authorized in electric utility rate cases have declined from 15.3 percent in 1984 to 1 ..7 percent for the twelve months ending March 31, 1991. Thus, electrics were able to earn within 70 basis points of their authorized returns in 1984 compared to a deficiency of 140 basis points today. (See Table 1.)

Moreover, in 1986, when long-term government bond yields averaged 8.2 percent and AA utility debt averaged 9.3 percent, authorized returns averaged 13.9 percent; yet last year, when governments averaged 8.7 percent and AAs averaged 9.7 percent, authorized returns averaged only 12.7 percent. So, in 1986 authorized returns exceeded AA utility bonds by 4.6 percent, and utilities actually earned their authorized

returns, while in 1990, with authorized returns exceeding AA utility bonds by 3.0 percent, electric utilities actually earned 1.4 percent *less* than authorized.

Prudence, CWIP, and Fuel Adjustment Clauses

It doesn't seem, on the face of it, that the direction or the levels of these returns appear conducive to further investment in electric utility equities, particularly at a time when even more positive regulatory action will be required in order to permit attraction of capital on reasonable terms for non-revenue producing, federally mandated capital additions and/or operating expenses. To assuage potential investor's concerns, regulators should consider the prudency of utility compliance strategy before the fact. Hence, it is especially disappointing that the Executive Committee of NARUC recently declined to support a resolution urging consideration of up-front and rolling prudency reviews as an official policy for major new generating projects.

Most electric utilities that anticipated being affected by the Clean Air Act Amendments began planning for compliance substantially in advance of November 15, 1990, when the Amendments became law. It was widely believed that having plans in place early could provide some advantage in the implementation of the strategy chosen, including early communication with state regulators. Given that a combination of alternatives were available to utilities to meet the targets of the Amendments, many viewed the best course to be providing regulators with data necessary to make decisions and ask for a regulatory decision on the course to follow, hoping to avoid the dreaded retrospective prudence review.

Unfortunately, political considerations arose. While fuel switching might be the lowest cost alternative, this could result in closing coal mines in the state. In other cases, scrubbers might well be the preferable strategy, but the capital costs of such a program would significantly contribute to the deterioration in financial condition of the utility even prior to its adding to the operating costs.

Table I
Electric Utility Returns on Average Common Equity: Authorized vs. Earned
(percent)

Year	Authorized	Earned[2]
1984	15.3	14.9
1985	15.2	14.3
1986	13.9	14.0
1987	13.0	13.1
1988	12.8	12.5
1989	13.0	12.3
1990	12.7	11.3
1991[3]	12.7	11.2

[1]Based on cases decided during the year.
[2]80-company composite, weighted by book equity.
[3]Authorized in cases decided during the first quarter of the year. Earned for the twelve months ending March 31, 1991.
Source: Regulatory Research Associates.

From the investors' point of view, it would be highly preferable if the compliance strategy to be used were approved in advance, with the greatest preference given to legislative approval. For example, Indiana has passed legislation giving utilities pre-approval for the recovery of expenditures for plant environmental controls, such as scrubbers. Unfortunately, the amount of time available to obtain legislative or regulatory assurances is short compared to when decisions must be made, at least for Phase I compliance. The need, however, is great, and investors are extremely desirous of reviews of compliance plans in order to eliminate or minimize after-the-fact prudence reviews and potential disallowances.

In addition to any up-front finding of prudency for compliance strategies, those utilities that will seek to comply by the addition of capital-intensive scrubbers may well seek to have their regulators revisit an old issue—Construction Work In Progress (CWIP). The issue here would seem to be that a utility planning to undertake the addition of scrubbers would be hard pressed to maintain its financial health and stability—qualities necessary in order to be able to attract required funds on the most reasonable cost basis—in the face of required capital expenditures that would not earn a cash return until they are placed in service some years down the line. Interest coverage ratios and cash flow to construction expenditure ratios will certainly suffer as a result of additional capital expenditures bearing no cash return, and these ratios are critical in rating agency examination for determining credit ratings. A cash return on such expenditures, however, would serve to protect critical ratios from deterioration due to the required expenditures and would also serve to protect customers from the rate shock associated with the eventual completion of the project.

Regulatory questions also arise for utilities planning on fuel switching or fuel mixing rather than scrubbing. Investors, I think, will not assume that the increased operating costs associated with

these techniques are merely operating costs that will automatically flow to ratepayers through the operation of fuel adjustment clauses. It should be remembered that just a few years ago the entire concept of fuel adjustment clauses was questioned, and, if prices of electricity are to increase substantially due to the operation of such clauses, they will again be brought under scrutiny. The solution, again, would appear to be some form of regulatory pre-approval process, with increases in fuel and transportation expenses occasioned by fuel switching/mixing, approved in advance, to be recovered as they are incurred and not subject to the kinds of lag that presently exist in some fuel clauses. No forum for disgruntled coal miners, or others, to object after the fact can be justifiable if regulators address the question prior to the utility making its decision on its compliance strategy. Investor questions as to the availability of low sulphur coal or gas and the ability to deliver them to plant sites should be answered prior to committing to such a program, and they are also likely to be questions asked by regulators.

No Free Lunch

In summary, I believe that the capital expenditures that will be required by electric utilities in order to achieve compliance can be handled by the capital markets in spite of an increasing worldwide demand for funds and an apparent decrease in funds available for investment. While no one is able to predict with certainty the rates at which these funds will become available, I can unequivocally state that the lowest rates will be available to those companies facing the least possible regulatory difficulties in implementing their compliance strategies.

Of course, investors and regulators will and should be concerned if it appears that individual utilities indicate that they believe that today's Clean Air Act requirements are likely to be reduced by future legislation and adopt compliance plans that appear to be only temporary solutions. Hopefully, few utilities are likely to do so.

The more likely eventuality is that investors will also harbor concern about companies that do not recognize the possibility of intense after-the-fact review of their plans by their regulators. These investors will certainly be interested in the regulatory stance taken on requests for pre-approval of the prudency of the companies' plan, requests for inclusion of CWIP in rate base for compliance-related capital expenditures, and requests for changes in fuel clauses. They will consider the potential effects of delays in recovery of capital or operating costs related to compliance and will assess a "penalty rate" on their capital, or not make it available at all if they believe such delays are likely to mean reduced debt ratings and/or reduced earnings for common equity.

Contributed by Carl H. Seligson, Senior Executive Consultant at Deloitte & Touche and former investment banker at Kidder, Peabody & Co. and Merrill Lynch & Co.

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